



OPERABLE UNIT TWO (OU2) REMEDIAL INVESTIGATION SCOPING DOCUMENT

**SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO**

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1.0 **INTRODUCTION**

This document is the Remedial Investigation (RI) Scoping Technical Memorandum for Operable Unit Two (OU2) of the South Dayton Dump and Landfill Site (Site). The purpose of this document is to present a summary of available information and identify data needed to further characterize OU2 conditions for the OU2 RI. Conestoga-Rovers & Associates (CRA) has prepared this OU2 RI Scoping Technical Memorandum on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) for Remedial Investigation/Feasibility Study (RI/FS) of the Site, Docket No. V-W-06-C-852 (Respondents).

The Respondents include Hobart Corporation (Hobart), Kelsey-Hayes Company (Kelsey-Hayes), and NCR Corporation (NCR). These three Respondents are and have been performing the Work required by the ASAOC under the direction and oversight of the United States Environmental Protection Agency (USEPA).

1.1 **SITE LOCATION AND BACKGROUND**

The Site is located at 1901 through 2153 Dryden Road (sometimes called Springboro Pike) and 2225 East River Road in Moraine, Ohio. The approximately 80-acre Site is a former disposal site and includes areas where municipal, industrial, and residual waste, and construction and demolition debris were disposed. The Site location is shown on Figure 1.1.

The Site is bounded to the north and west by the Miami Conservancy District (MCD) floodway¹ (part of which is included in the definition of the Site), the GMR Recreational Trail and the GMR beyond. The Site is bounded to the east by Dryden Road with light industrial facilities beyond, to the southeast by residential and commercial properties along East River Road with a residential trailer park beyond, and to the south by undeveloped land with industrial facilities beyond.

The Site has been defined in the Statement of Work (SOW) as an area of approximately 80 acres, including the Valley Asphalt plant in the northernmost portion of the Site (Parcel 5054), an auto salvage yard in the southeast (Parcels 3753 and 4423) and a gravel

¹ The MCD defines a floodway as the channel of a river or watercourse and the adjacent land areas that have been reserved in order to pass a specified flood discharge. The floodway is usually characterized by any of the following: moderate to high velocity flood water, high potential for debris and projectile impacts, and moderate to high erosion forces. The MCD floodway is not the same as the 100-year floodway and 100-year floodplain areas at the Site based on FEMA flood insurance maps, which are more extensive than the MCD definition.

pit/quarry pond (the Quarry Pond, Parcels 3274 and 5178) in the southern part of the Site. The central 40 acres (described as 23 acres in some documents) of the Site was referred to as the South Dayton Dump and Landfill in some reports. More recent information including an undated tax map in the Montgomery County Health Department (MCHD) files, soil boring logs, drums found at Valley Asphalt, USEPA's aerial photograph analysis, underground storage tank (UST) closure reports, the deposition of Horace (Jack) Boesch Jr., and investigations completed as part of the OU1 RI indicate that landfilling and other waste disposal and handling activities occurred across much of the Site and that the Site extends partially onto the adjacent MCD-owned floodway to the west of the Site.

1.1.1 OWNERSHIP

Cyril Grillot and Horace Boesch acquired interests in portions of the approximately 40-acre central portion of the Site starting in 1936. The properties to the north (currently Valley Asphalt) and the vacant land and pond to the south were also owned by Grillot and Boesch. Horace Boesch purchased the land to the north in 1945 (a half interest was subsequently transferred to Cyril Grillot in 1951) and sold it to Valley Asphalt in 1993.

The SOW identifies the following 14 Parcels from the Montgomery County Tax Rolls as part of the Site: 5054, 5171, 5172, 5173, 5174, 5175, 5176, 5177, 5178, 3274, 3753, 4423, 4610, and 3252. Subsequent investigations identified waste and Site-related fill material on adjacent Parcels 3056, 3057, 3058, 3275, and 3278. In correspondence from USEPA (March 15, 2010) and the Respondents (April 1, 2010), these Parcels were added to the definition of the Site.

Seven Parcels are jointly owned by Katherine A. Boesch, widow of Horace J. Boesch, and Margaret C. Grillot, widow of Cyril J. Grillot. Horace J. Boesch and Cyril J. Grillot had jointly owned the seven Parcels (5171, 5172, 5173, 5174, 5175, 5176, and 5177) since at least 1952 and had acquired them in a series of transactions between 1936 and 1952. Parcels 5171 and 5054 were part of two tracts acquired by Horace J. Boesch or Cyril J. Grillot in 1936 and 1952, respectively. Parcel 5171 is part of the Grillot and Boesch Plat and is currently jointly owned by Katherine A. Boesch and Margaret C. Grillot. Parcel 5054 was acquired by Valley Asphalt in 1993; however, lease records suggest that Valley Asphalt's association with the Parcel began in 1956.

The south and southeastern parts of the Site comprise five Parcels 3274, 3753, 4423, 4610, and 3252. Horace J. Boesch or Cyril J. Grillot at one time owned these Parcels. Parcel 3274 is currently owned by the MCD and was acquired from the University of

Dayton in 1969. Horace J. Boesch and Cyril J. Grillot gave the property to the University of Dayton in 1968. Boesch and Grillot had held the Parcel since acquiring a 30-acre tract from John Albert Davis in 1945.

The 30-acres also included Parcels 3753, 4423, and 4610. Parcel 3753 was conveyed to Doyle Roberson and Virginia Roberson in 1975, who then conveyed the Parcel to Ollie Lacy in 1988. Following the distribution of property after the death of Horace Boesch, Cyril Grillot and the Boesch heirs conveyed Parcels 4423 and 3252 to Ollie and Judith Lacy in two transactions in 1981. Following the death of Judith Lacey in 1987, Ollie Lacy acquired sole ownership of these Parcels. In 1989, Ollie Lacy conveyed Parcel 4610 to the current owner, Ronald Barnett. Attached to the deed was a legal description of Parcel 4610 that implied that it was originally part of Parcel 4423.

Following Ollie Lacy's death in 1990, his heir conveyed Parcels 3252, 3753 and 4423 to Sharon Roe, who then conveyed Parcel 3252 to Ronald Barnett in 1992 and Parcels 3753 and 4423 to South Dayton Salvage, Inc in 1996. Ronald Barnett is the owner of Parcels 3252 and 4610. South Dayton Salvage, Inc. conveyed both Parcels 4423 and 3753 to Jim City Salvage, Inc. after 1999. The current owner of Jim City Salvage is Jim Worley. Williem Zachar, the previous owner of South Dayton Salvage, signed the Land Installment Agreement for Parcel 3753 in 1978.

The MCD owns Parcels 3056, 3057, 3058, 3207, 3274, 3275, and 3278. MCD acquired Parcel 3056 prior to 1937 and there was no evidence that any member of either the Grillot or the Boesch families ever owned it. While there are some location discrepancies in the records with respect to Parcels 3057 and 3058, ownership by Horace J. Boesch (Parcel 3057) and Cyril J. Grillot (Parcel 3058) is limited to one or two years in the mid-1930s. Parcel 3275 was acquired by MCD in 1938 and Parcel 3207 was acquired by Walloon Holdings, LLC, from the heirs of John Albert Davis.

1.2 OPERABLE UNITS

In a letter dated January 9, 2008, USEPA proposed that the Site be divided into two operable units, OU1 and OU2. OU1 comprises the "landfill source area of the Site" and OU2 comprised "off-Site areas not addressed by the presumptive remedy". USEPA proposed that the Respondents complete a Streamlined RI/FS report for OU1 and a conventional RI/FS report for OU2.

1.2.1 OPERABLE UNITS LIMITS

OU1 includes the following groundwater components:

- Shallow groundwater (i.e., nominally at elevations above 675² feet above mean sea level [ft AMSL]), within the OU1 Area
- Deeper groundwater (i.e., nominally at elevations below 675 ft AMSL), within the OU1 Area

The limits of OU2 are depicted on Figure 1.2. OU2 includes the following areas or media, which are separate from OU1:

- Debris, surface and subsurface soil, and hot spots outside the OU1 Area [e.g., the floodplain³ area between the Site and the Great Miami River (GMR)] attributable to historic Site operations
- Parcel 3274 and parts of Parcels 5177 and 5178 not addressed in OU1, including submerged portions of the Quarry Pond
- Portions of Parcel 3275, which are owned by MCD, upon which waste has been placed
- Parcels 3753, 4423, 4610, and 3252, including active businesses along the southeast portion of the Site
- Shallow groundwater (i.e., nominally at elevations above 675 feet above mean sea level [ft AMSL]), outside the OU1 Area
- Deeper groundwater (i.e., nominally at elevations below 675 ft AMSL), outside the OU1 Area
- Leachate outside the OU1 Area (e.g., the floodplain area between the Site and the GMR)
- Landfill gas (LFG) and soil vapor outside the OU1 Area

² Monitoring wells screened above approximately 675 ft AMSL appear to be representative of the Upper Aquifer Zone. Monitoring wells screened below 675 ft AMSL appear to be representative of the Lower Aquifer Zone.

³ The MCD defines a floodplain as a strip of relatively flat and normally dry land alongside a stream, river or lake that is covered by water during a flood. The floodplain area between the Site and the GMR is not the same as the 100-year floodway and 100-year floodplain areas at the Site based on Federal Emergency Management Agency (FEMA) flood insurance maps, which are more extensive than the MCD definition.

- Surface water and sediment outside the OU1 Area (e.g., in the Quarry Pond and in the GMR adjacent to and downstream of the Site)
- Air within the OU2 Area

These areas and media are not addressed by the Presumptive Remedy, are the Site areas or media in which it is not clear that there is a basis for remedial action and that a Presumptive Remedy approach is appropriate. Therefore, the Respondents will address these areas and media through a conventional (i.e., not streamlined) RI/FS, human health risk assessment, and ecological risk assessment.

1.2.2 DESCRIPTION OF PARCEL GROUPINGS

CRA has divided the Parcels into groups for discussion based on the sequence of filling, the types of waste and fill⁴ visually observed at investigated locations, and the general location with respect to type within the Site boundary, as follows:

<i>OU2 Parcel Grouping (Total Acreage)</i>	<i>Parcel</i>	<i>Size (in acres)</i>
Northern (24.9)	5177 (portion of)	3.6
	3056 (portion of)	3.4
	3057 (portion of)	0.2
	3058 (portion of)	0.2
Central (26.3)	5177 (portion of)	21.8
	3278 (portion of)	3.4
	Un-numbered (at Site entrance)	1.1
Jim City and Barnett (8.3)	3753	2.5
	4423	3.5
	4610	2.0
	3252	0.3

⁴ Throughout the RI/FS, CRA has used the term "waste" to denote material CRA visually identified as solid waste based on the definition in OAC 3745-27, residual waste based on the definition in OAC 3745-30, industrial waste based on the definition in OAC 3745-29, and construction and demolition debris based on the definition in OAC 3745-400 and the term "fill" to denote material CRA visually identified as being "earth...from construction, mining, or demolition operations", which is specifically excluded from the definition of solid waste in OAC 3745-27. These classifications are based solely on visual observations recorded on stratigraphic logs, as definitions in the OAC are qualitative, and do not include quantitative analytical characterization. CRA has used the term "filling" to refer to CRA's visual identification of waste or fill material and the term does not differentiate between the two. "Landfilling" refers to CRA's visual identification of waste only.

<i>OU2 Parcel Grouping (Total Acreage)</i>	<i>Parcel</i>	<i>Size (in acres)</i>
Quarry Pond (21.4)	3274	6.3
	3275 (portion of)	0.2
	5178	14.9

- Northern Parcels: Portion of Parcel 5177 north of the existing fence line (Valley Asphalt facility), and the eastern portions of Parcels 3056, 3057, and 3058 (MCD) on to which the embankment forming the western edge of the Site extends
- Central Parcels: Remainder of Parcel 5177 (Boesch and Grillot) and the eastern portion of Parcel 3278 (MCD)
- Jim City and Barnett Parcels: Parcels 3753 and 4423 (Jim City Salvage) and 4610 and 3252 (Ron Barnett Construction)
- Quarry Pond Parcels: Parcels 3274 and 3275 (MCD) and 5178 (Boesch and Grillot)

The Jim City and Barnett Parcels and the Quarry Pond Parcels constitute the OU2 Southern Parcels, the exact boundaries of which are discussed in Section 1.2.1 above, and are the focus of this report. The nature and extent of the waste visually observed at investigated locations on the OU2 Southern Parcels along with a discussion of the associated contaminants are discussed in Section 2.0.

1.3 REPORT OBJECTIVES AND ORGANIZATION

The objective of this document is to provide the basis for determining the field data collection activities that are needed to characterize OU2 conditions for the OU2 RI. The field data collection procedures will be detailed in the OU2 RI Work Plan, to be developed following agency review and approval of this scoping document.

This document is organized as follows:

- Section 1.0 provides an introduction, including Site background, a discussion of operable units, report objectives and organization.
- Section 2.0 provides information regarding previous investigations, including analytical data and sampling locations, and identified data gaps.
- Section 3.0 provides a description of the proposed field data collection activities and data quality objectives.
- Section 4.0 provides references for previous investigations and other documents.

2.0 **SUMMARY OF OU2 INVESTIGATION RESULTS**

This section presents a summary of the investigation results for the OU2 parcels (i.e., Quarry Pond, Jim City, and Ron Barnett Parcels) that are part of the Site. The Quarry Pond, Jim City, and Ron Barnett Parcels are collectively referred to herein as the "Southern Parcels". The Quarry Pond occupies Parcels 3274, 3275, and 5178. Jim City occupies Parcels 3753 and 4423. Ron Barnett occupies Parcels 4610 and 3252. The Site Parcels are shown on Figure 1.2.

The following also presents a summary of available information related to the history of the OU2 parcels, and a visual description⁵ of the nature of the material encountered at OU2 investigative locations. This discussion is based on a review of historic documents, a review of aerial photographs, and several intrusive investigations, including historical investigations, borehole advancement, test pit and test trench excavation, and soil and groundwater sample collection. Data gaps based on the available information are also presented in this section.

2.1 **QUARRY POND PARCELS**

The investigations and sample collection activities completed by CRA and others in the Quarry Pond Parcels include the following:

- Geophysical investigations (EM31 conductivity, EM61 metal detection, and total field magnetic anomaly surveys). See Figure 2.1 for areas of identified anomalies.
- Test trenches excavated based on the results of the geophysical surveys and other field observations. These are identified as TT-14, TT16, TT-16A and TT-17 on Figure 2.1.
- Soil/fill material samples from selected test trenches. The analytical results are summarized in Table 2.1.
- Surface water samples from three locations as shown on Figure 2.2. The analytical results are summarized in Table 2.2.
- Sediment samples from eight locations (during earlier investigations by others) as shown on Figure 2.2. The analytical results are summarized in Table 2.3.
- Radiation screening of soil/fill (at ground surface). The results are shown on Figure 2.3.

⁵ Waste classifications as described in OAC 3745-27, 29, 30, and 400, are based on visual observations. OAC waste classifications do not require analytical characterization.

- Vertical Aquifer Samples (VAS) from three locations (VAS-13, VAS-19, and VAS-20) as shown on Figure 2.4. The analytical results are summarized in Table A-1 of Appendix A.
- Groundwater samples from monitoring wells (MW-209, MW-209A, MW-212, MW-218A, and MW-218B) as shown on Figure 2.4. The analytical results are summarized in Table A-2 of Appendix A.

Overview of OU2 Quarry Pond Parcels History and Fill Material Information

Based on the USEPA Aerial Photographic Analysis of South Dayton Dump Site and CRA's analysis of the available aerial photos, the area south of the east-west access road (portions of Parcels 3274 and 5178) was excavated from the 1950s to 1970s for a gravel extraction operation. The northeastern portion of Parcel 5178 appears to have been partially filled in by 1981. There are no data to indicate whether the area of the present Quarry Pond below the water level was filled beyond the material placed in the northeastern portion of the Quarry Pond or beyond the current extent of the northern, eastern, and western embankments of the Quarry Pond.

There are no data to indicate how far the material placed in the northeastern portion of the Quarry Pond extends into the pond or whether the material placed along the embankments extends into the Quarry Pond. CRA did not observe non-native soil material during drilling VAS-20, located in the center of the southern Quarry Pond embankment. However, there are no data to indicate how far the landfill material observed during drilling of VAS-13 at the western corner of the southern Quarry Pond embankment, or TT-18 on Parcel 3753 extends towards VAS-20. CRA observed traces of glass and concrete debris in the top two feet of fill from VAS-13.

There is debris in the Quarry Pond that appears to have either been dumped by third parties or trespassers, after the Site operations ceased, into the pond or washed there during storm events. At the time of CRA's November 17 and 18, 2005 inspections, CRA observed four partially submerged drums that appeared to be empty in the northeastern part of the Quarry Pond. Ohio EPA, Ohio Department of Natural Resources (DNR) and the District Attorney's Office completed a sonar and underwater camera investigation of the Quarry Pond on November 9, 2012. The sonar survey identified tires and 25 to 30 objects of a size and shape that may be indicative of drums; these possible drums were dispersed throughout the Quarry Pond but were most prevalent at the north edge of the pond, below the east-west access road that transects the Site. The Ohio DNR observed a mound of submerged tires as well as multiple tires along the embankment leading from the Jim City Parcels.

The geophysical survey results for the Quarry Pond floodplain (northeastern portion of Parcel 5178) indicate that anomalous EM61 responses were detected in areas where reinforced concrete was observed at ground surface. CRA observed coincident EM61 and magnetic anomalies in the vicinity of TT-14, TT-16, and TT-16A. CRA encountered metal rods and rebar in the upper 5 feet of waste at these locations, consistent with EM31 and EM61 readings for these anomalies.

CRA excavated four test trenches (TT-14, TT-16, TT-16A, and TT-17), installed VAS boreholes at three locations (VAS-13, VAS-19, and VAS-20), and installed three monitoring wells (MW-209A, MW-218A, and MW-218B) on Quarry Pond Parcels 3274 and 5178. Historic investigations included one soil boring, GT-212, and two monitoring wells (MW-209 and MW-212) in this area. At these 12 test trench and soil boring locations in the northeast portion of Parcel 5178, and in the embankment surrounding the Quarry Pond, CRA and previous consultants visually identified mainly fill and residual waste (i.e, foundry sand) as well as construction and demolition debris (e.g., concrete, brick, asphalt, rebar, and roofing shingles). Due to the lack of anomalies, CRA did not excavate trenches or advance any soil borings on Parcel 3275.

Based on field screening, CRA collected four soil samples from three locations on Parcel 5178: TT-14, TT-16, and TT-17). The concentrations of PAHs and metals in soil samples collected from these three test trench locations were greater than Industrial Soil USEPA Regional Screening Levels (RSLs).

The Quarry Pond itself encompasses approximately 15 acres of the 20-acre Quarry Pond Parcels. CRA has not collected any samples for USEPA Target Compound List (TCL) or Target Analyte List (TAL) analyses from Parcel 3274, and CRA has not completed any installations nor has any analytical data for the subsurface material present on Parcel 3275.

Ohio EPA and the Payne Firm Inc. (PFI) produced analytical data for eight sediment samples collected between 1996 and 2000 are available for the Quarry Pond. Ohio EPA collected two sediment samples 15 to 18 feet below the water surface of the Quarry Pond, 150 and 350 feet west of the northeast corner of the Quarry Pond in 1996 (samples S15OEPA and S16OEPA). The concentrations of PAHs and metals in the Ohio EPA sediment samples were greater than Industrial Soil RSLs. PFI collected three sediment samples during each of their 1999 and 2000 sampling events (Sediment-1, Sediment-2, Sediment-3, SED-1, SED-2, and SED-3) for VOC analyses. The depths of the PFI sediment samples are unknown. The concentrations of VOCs in the PFI samples, if detected, were less than Industrial Soil RSLs.

The observed depths of fill and waste beneath the Quarry Pond Parcels range from 0 to 36 feet.

Data Gaps

CRA has identified the following data gaps in this area:

- Characterization of the fill material (surface and sub-surface) surrounding the Quarry Pond within Parcels 3274, 3275, and 5178.
- Further characterization of groundwater conditions below the fill material and along the perimeter of the Quarry Pond Parcels.
- Based on data collected from the soil and groundwater investigation, soil gas monitoring within the fill material and along the southern and western perimeters of the Quarry Pond Parcels may be warranted.
- Determination of the presence of non-native material at the base of the Quarry Pond.
- Characterization of the soil/sediment at the base of the Quarry Pond.
- Characterization of surface water quality within the Quarry Pond.

2.2 OU2 JIM CITY AND RON BARNETT PARCELS

The investigations and sample collection activities completed by CRA on the Jim City and Ron Barnett Parcels (Parcels 3753, 4423, 4610, and 3252) include the following:

- Geophysical investigations (EM31 conductivity, EM61 metal detection, and total field magnetic anomaly surveys). See Figure 2.1 for areas of identified anomalies.
- Test trenches based on the results of the geophysical surveys and other field observations. These are identified as TT17 and TT18 on Figure 2.1.
- Soil/fill material samples from selected test trenches. The analytical results are summarized in Table 2.1.
- Soil gas probes at four locations (GP07-09, GP08-09, GP09-09, GP-10-09) and one location (GP06-09) on adjacent Parcel 3261, as shown on Figure 2.2. The monitoring results are shown on Table 2.4 (VOCs) and Table 2.5 (field parameters).
- Radiation screening of soil/fill (at ground surface). The results are shown on Figure 2.3.

- VAS groundwater samples from one location (VAS-22), as shown on Figure 2.4. The analytical results are summarized in Table A-1 of Appendix A.

Overview of OU2 Jim City and Ron Barnett Parcels History and Fill Material Information

The USEPA Aerial Photographic Analysis of South Dayton Dump Site included aerial photographs taken between the 1950s and 2000 show that portions of the area south of the east-west access road and east of the Quarry Pond (portions of Parcels 3753 and 4423 and the western portion of Parcel 4610) were excavated between the 1950s and 1970s. The ground surface in the eastern portions of these parcels appears to have been disturbed during the same time period; however, it is unclear, in the aerial photographs, whether the excavation extended across the entirety of these parcels. Based on aerial photographs and Site documents, the eastern portion of Parcels 3753, 4423, and 4610, appears to have been re-graded and was filled during the 1970s and 1980s. Filling commenced at the eastern side of Parcel 3753 and progressed westward, resulting in the filling of Parcels 3753 and 4423 to current grades.

Based on information from Ohio EPA records and a review of aerial photographs, Mantle Oil Service, formerly located at 2227 East River Road, operated on Parcel 4610 between 1971 and 1986/7. The aerial photographs indicate buildings were constructed on Parcel 4610 sometime between September 1970 and April 1973. Additional buildings and ASTs are visible in the 1975 aerial photograph.

During the geophysical investigation, CRA detected metallic anomalies associated with scrap metal and partially buried car parts on Parcels 3753 and 4423 (Jim City Salvage property). The EM61 metal results for Parcels 3753 and 4423 (Jim City Salvage property) indicate that the majority of the responses can likely be attributed to metallic objects, relating the scrap metal operations at or near ground surface.

CRA identified two areas of greater conductivity the Jim City Salvage property. A summary of the geophysical anomalies is provided on Figure 2.1. CRA did not identify any significant magnetic or EM61 metallic responses in the northernmost elevated EM31 conductivity anomaly on Jim City property Parcel 4423, which indicates the anomalies are likely the result of conductive fill or waste, rather than buried metal objects, such as drums or tanks. CRA encountered rebar and scrap metal in the upper 5 feet of waste during the excavation of TT-17, which was located 38 feet south of the EM31 anomaly that had a conductivity response of 50 millisiemens per meter (mS/m). On Parcel 4423, CRA encountered foundry sands during the drilling of VAS-22, which was located

within the southern conductive anomaly. The identified material and associated depths are consistent with EM31 and EM61 readings for these anomalies. It is not possible to say whether TT-18 and GP07-09 were located within or outside of conductive anomalies, as Parcel 3753 was not included in the EM31 Electromagnetic Survey because the Parcel could not be surveyed, due to the presence of surface material (e.g., manhole lids, tire rims, mechanical equipment) that could not be moved.

CRA identified two areas of conductive areas on Parcel 4610 (one of the Ron Barnett Construction Parcels). The EM31 conductivity anomalies on Parcel 4610 contained a lack of magnetic or EM61 metal detection responses, which indicates the anomalies may be the result of conductive fill or waste, rather than buried metal objects, such as drums or tanks. CRA encountered dark gray/black sand and silt during the advancement of GP10-09, located within the larger of the two conductive anomalies on Parcel 4610. The identified material and associated depths are consistent with EM31 and EM61 readings for these anomalies.

CRA excavated two test trenches (TT-17 and TT-18), installed one VAS boring (VAS-22), and installed four soil gas probes (GP07-09 to GP10-09) on the Jim City and Ron Barnett Parcels. The soil gas sample collected from GP08-09 contained chloroform at a concentration greater than the residential soil vapor screening level (SVSL). The soil gas samples collected from GP09-09 and GP10-09 contained VOCs (chloroform, naphthalene, tetrachloroethene, and/or trichloroethene) at concentrations greater than residential and/or industrial SVSLs. At these seven locations on the Jim City and Ron Barnett Parcels, CRA encountered residual waste (foundry sand) and construction and demolition debris (concrete, wood, brick, and railroad ties), to depths of 14 feet below ground surface (bgs).

Where present the observed depth of fill beneath the Jim City and Ron Barnett Parcels ranges from greater than 12 feet to greater than 25 feet. The fill on these parcels ranges in thickness from greater than 12 feet to 26 feet.

Data Gaps

CRA has identified the following data gaps:

- Characterization of the fill material (surface and sub-surface) within Parcels 3753, 4423, 4610, and 3252.
- Further characterization of groundwater conditions below the fill material and along the eastern perimeter of the Jim City and Ron Barnett Parcels.

- Based on the results of the soil and groundwater investigation, the Respondents will complete soil gas monitoring within the fill material and along the eastern perimeter of the Jim City and Ron Barnett Parcels if warranted.

2.3 GROUNDWATER

The results of groundwater investigations conducted to date in both OU1 and OU2 are documented in multiple reports, identified in Section 4.0. The analytical data for groundwater at the OU2 Parcels are contained in Appendix A.

CRA will complete further investigations to characterize groundwater conditions within the limits of the Southern Parcels (see data gaps noted in Sections 2.1 and 2.2).

CRA will fully identify and address the data gaps for OU2 groundwater following completion of the OU1 Groundwater Investigation as agreed to by USEPA in periodic conference calls to discuss the scope of OU2.

2.4 GREAT MIAMI RIVER AND FLOODPLAIN AREA

Investigations of the floodplain area have involved examining the fill material conditions adjacent to the floodplain, delineated as shown on Figure 2.5. CRA has not identified any evidence of leachate seeps along the embankment of the fill material adjacent to, and nearby areas within the floodplain during Site inspections completed from September 2008 to November 2009.

The investigations and sample collection activities completed by CRA and others for the GMR and floodplain area include the following:

- Three soil samples (S05, S08, and S10) collected from locations along the fill material boundary as shown on Figure 2.5. The analytical results are summarized in Table 2.1. The results indicate that select polycyclic aromatic hydrocarbons, thallium, lead, iron, arsenic and polychlorinated biphenyls were present at concentrations greater than USEPA Residential and/or Industrial RSLs.

Three sediment samples (S17, S18, and S19) collected from the GMR as shown on Figure 2.5. The analytical results are summarized in Table 2.3. The results indicate that select polycyclic aromatic hydrocarbons, thallium, and arsenic exceed USEPA Soil

Residential and/or Industrial RSLs. CRA notes that comparison to Soil RSLs is not directly applicable to sediment.

Data Gaps

CRA has identified the following data gaps:

- Characterization of the soil conditions adjacent to the fill material boundary and the recreational trail.
- Characterization of background soil conditions within the floodplain area.
- Characterization of surface water quality and sediment conditions within the GMR adjacent to, and immediately downstream of, the Site.
- Characterization of background surface water quality and sediment conditions within the GMR upstream of the Site.

3.0 **PROPOSED FIELD INVESTIGATION ACTIVITIES**

3.1 **DATA QUALITY OBJECTIVES**

USEPA Data Quality Objectives (DQOs) are a flexible and iterative planning process used to determine the type, quantity, and quality of data required in order to obtain defensible decisions. The DQO process consists of seven iterative steps, as follows:

Step 1: State the Problem. Define the problem that necessitates the study: identify the planning team, examine budget and schedule

Step 2: Identify the Goal of the Study. State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes

Step 3: Identify Information Inputs. Identify data & information needed to answer study questions

Step 4: Define the Boundaries of the Study. Specify the target population and characteristics of interest, define spatial and temporal limits, scale of inference

Step 5: Develop the Analytic Approach. Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings

Step 6: Specify Performance or Acceptance Criteria.

Step 7: Develop the Plan for Obtaining Data. Select the resource-effective sampling and analysis plan that meets the performance criteria

CRA developed DQOs for OU2, based on results of previous investigations, and data gaps. All data collected will ultimately be used in the Baseline Risk Assessment for OU2. The DQO development process is detailed in Tables 3.1 through 3.6 and summarized in the following sections. The field investigation will be conducted using a phased approach to characterize various media and identify data requirements for subsequent assessment and delineation.

3.2 **SOUTHERN PARCELS FILL INVESTIGATION**

The objectives of the Fill Investigation within the Southern Parcels include:

- Determination of the lateral and vertical extent of the fill material to support the overall site assessment
- Characterization of the fill material (surface and subsurface) to identify direct contact risks, for input to the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA)

- Determine if potential impacts area result of historic operations, current business operations or the result of off-Site sources
- Based on results of the overlying fill investigation, characterization of groundwater quality below the fill material to assess potential groundwater impacts due to the presence of the fill
- Based on the results of the soil and groundwater investigation, characterization of soil gas conditions within the fill material to assess potential impacts to ambient air and nearby occupied structures

DQOs for fill (soil), groundwater, and soil gas within the Southern Parcels are presented in Tables 3.1, 3.2, and 3.3, respectively.

The Phase 1A investigation of the fill within the Southern Parcels will include surface and subsurface soil and groundwater sample collection and analyses to identify direct contact risks and risks to groundwater as outlined below:

- Completion of approximately 40 soil borings within the Quarry Pond Parcels at the approximate locations shown on Figure 3.1.
- Collection of continuous samples to log the subsurface conditions, through the entire thickness of the fill material and up to approximately 5 feet into the underlying native material.
- Collection and analyses of soil/fill samples for laboratory analysis (Target compound list (TCL) volatile organic compounds (VOCs), TCL semi-VOCs (SVOCs), TCL pesticides/polychlorinated biphenyls (PCBs), TCL herbicides, TAL metals and cyanide) from each soil boring from the following intervals:
 - 0 to 2 feet bgs
 - One discrete sample interval selected from the fill material, if found, below 2 feet bgs, based on field screening results
- CRA will collect one groundwater sample for laboratory analysis (TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide) at the base of each soil boring where groundwater is encountered, using a temporary well screen positioned at the base of the borehole. These data will serve to provide an indication of potential impacts to groundwater related to infiltration of surface water through the fill material.
- CRA will conduct soil gas monitoring if required based on conditions determined from soil borings, as discussed in Section 3.2.1.

Phase 1B consists of an off-Site background soil investigation that will be completed concurrently with Phase 1A. The Respondents will collect background soil samples from nearby properties, if accessible, and which are not associated with industrial activity. The data collected from the soil sampling locations in the Southern Parcels (Phase 1A) will be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If soil containing contaminant concentrations greater than performance and/or acceptance criteria is found in Phases 1A and 1B, additional soil samples will be collected to delineate soil impacts or to remove data gaps.

3.2.1 SOIL GAS MONITORING

CRA and USEPA completed soil vapor intrusion studies in 2012 and 2013 to assess potential effects on occupied buildings located on and in the immediate Site vicinity. In order to further assess soil gas conditions within the OU2 fill material, CRA will install temporary soil gas probes at selected locations, dependent on the observations CRA makes during the drilling of the soil boring specifically, if CRA identifies evidence of waste or chemically-impacted material. CRA will provide the probe locations to USEPA for review, if they are needed, prior to implementing the work. The probes will be used for soil gas monitoring, augmenting the existing probes located within the Southern Parcels, to determine the presence of VOCs and explosive gases using field instruments. CRA will assess the need for further soil gas monitoring within or beyond the fill material limits, based on the results of the initial monitoring.

3.3 QUARRY POND INVESTIGATION

The objectives of the Quarry Pond investigation include:

- Determination if non-native material exists at the base of the Quarry Pond (to determine if the operators filled the area in prior to constructing the pond)
- Characterization of surface water quality as input to the HHRA and ERA
- Characterization of sediment quality as input to the HHRA and ERA

DQOs for surface water and sediment are presented in Tables 3.4 and 3.5, respectively.

The Phase 1A investigation of the Quarry Pond will include surface water and sediment sampling to identify direct contact risks and risks to potential ecological receptors as outlined below:

- Sediment samples will be collected at approximately nine locations, as shown on Figure 3.3. The sample locations will be adjusted based on the results of underwater survey inspections conducted by Ohio EPA, Ohio DNR and the District Attorney's office, to include consideration of any areas where foreign objects may have been deposited and the likelihood of sediment contamination may be greater.
- Each sediment sample will be collected from the upper 6 inches of the sediment material and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.
- Surface water samples will be collected at approximately five locations as shown on Figure 3.3.
- Each sample will be collected from approximately the mid-point of the water column and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.

Based on the results of the Phase 1A investigations discussed above, CRA will determine the need for additional (Phase 1B) data collection. This may include, for example, collection of surface water and sediment samples from background locations; and additional sample collection from the Quarry Pond to refine the distribution of COCs.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If surface water and sediment containing contaminant concentrations greater than performance and/or acceptance criteria is found in Phases 1A and 1B, additional samples will be collected to delineate surface water and/or sediment impacts or to remove data gaps.

3.4 GROUNDWATER INVESTIGATION

CRA will propose the scope of, and DQOs for, the OU2 Groundwater Investigation following completion of the OU1 Groundwater Investigation. Also, the OU2 Groundwater Investigation scope will be developed based on data collected from the initial phases of the OU2 investigation.

3.5 FLOODPLAIN INVESTIGATION

The objectives of the Floodplain investigation include:

- Characterization of the surface soil as input to the HHRA and ERA
- Determine if potential Floodplain soil contamination is a result of migration from the Site

DQOs for soil within the Floodplain are presented in Table 3.6.

The Phase 1 investigation of the GMR floodplain will include soil sample collection and analyses from the floodplain to identify direct contact risks as outlined below:

- Surface soil samples will be collected at approximately 15 locations within the floodplain adjacent to the OU1 Presumptive Remedy Area (PRA) and OU2 as shown on Figure 3.2.
- At each location soil samples will be collected from two depth increments, i.e., 0 to 0.5 feet bgs and 1 to 2 feet bgs, which is relevant for data use in the OU2 RI Report and in the HHRA and ERA.
- CRA will analyze each sample for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.

Phase 1B consists of an off-Site background soil investigation that will be completed concurrently with Phase 1A. Surface soil samples will be collected at approximately 10 locations within the floodplain upstream of the Site to establish local background locations. The data collected from the soil sampling locations in the floodplain (Phase 1A) will be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If soil contains contaminants at concentrations greater than performance and/or acceptance criteria is found in Phases 1A and 1B, additional soil samples will be collected to delineate soil impacts or to remove data gaps.

3.6 GREAT MIAMI RIVER (GMR) INVESTIGATION

The objectives of the GMR investigation include:

- Determine if the Site significantly adds to contaminants in sediment and surface water in the GMR
- Characterization of the surface water quality as an input to the HHRA and ERA
- Characterization of sediment quality as an input to the HHRA and ERA

DQOs for surface water and sediment are presented in Tables 3.4 and 3.5, respectively.

The Phase 1A investigation of the GMR will include surface water and sediment sampling to identify direct contact risks and risks to potential ecological impacts as outlined below:

- Sediment samples from at approximately 12 locations within the river adjacent to the PRA and OU2 as shown on Figure 3.4.
 - CRA will collect each sediment sample from the upper 6 inches of the sediment material and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.
- Surface water samples from approximately 12 locations within the GMR adjacent to the PRA and OU2 as shown on Figure 3.4.
 - CRA will collect each surface water sample from approximately the mid-point of the water column and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides and TAL metals parameters.

Phase 1B consists of an upstream background GMR surface water and sediment investigation that will be completed concurrently with Phase 1A. Sediment samples from three transects and surface water samples collected from two transects regularly space upstream of the Site will be collected on two separate sampling rounds. The data collected from the GMR surface water and sediment sampling locations (Phase 1A) will be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations. Upstream background sample locations will be collected along transects regularly spaced upstream of the Site and downstream of the dam.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. Based on the results of the Phase 1A and 1B investigations discussed above, CRA will determine the need for additional data collection. This may include, for example, additional surface water or sediment sampling in the river to refine the distribution of COCs; and benthic studies to assess possible ecological receptors.

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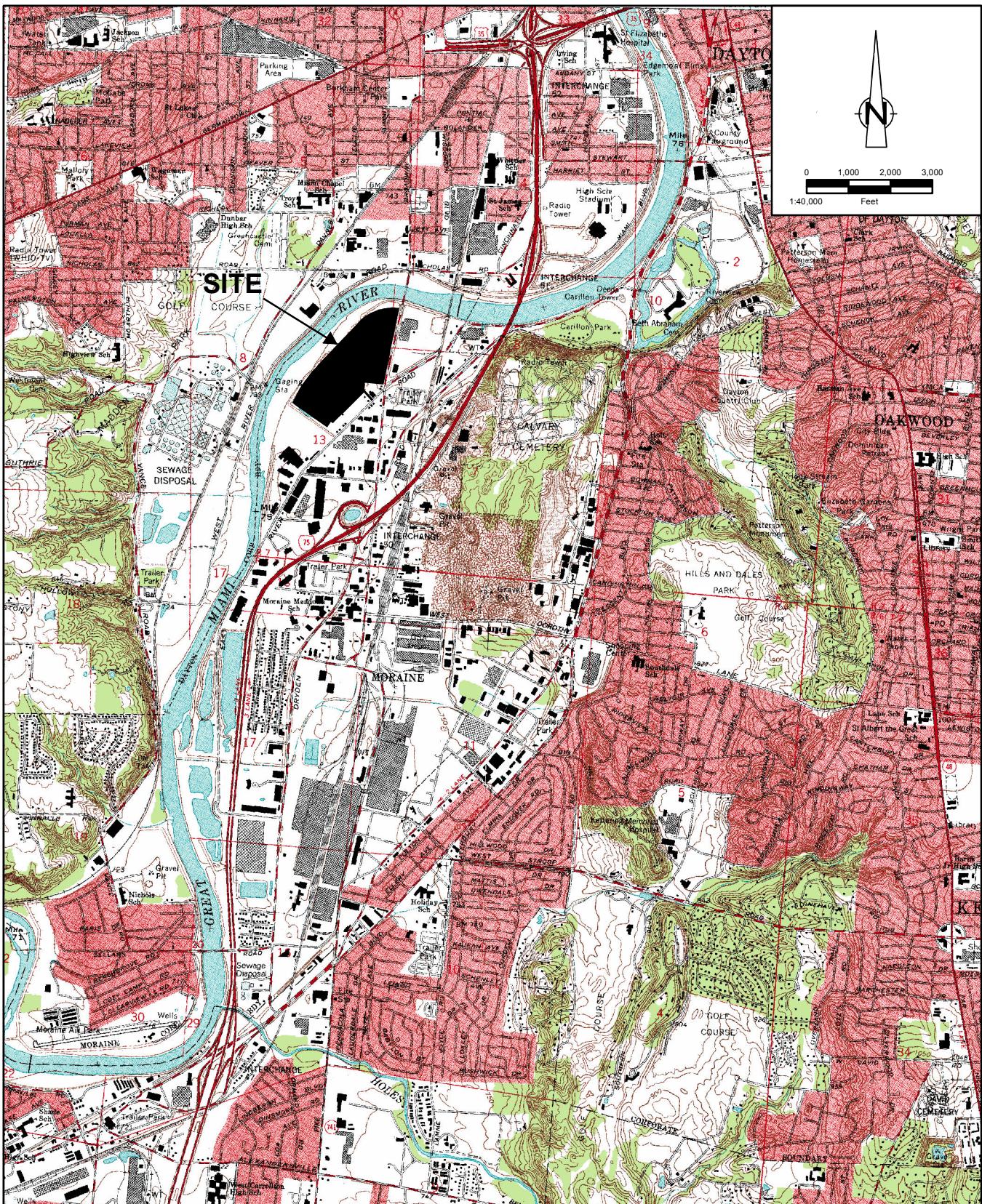


figure 1.1

SITE LOCATION MAP
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio



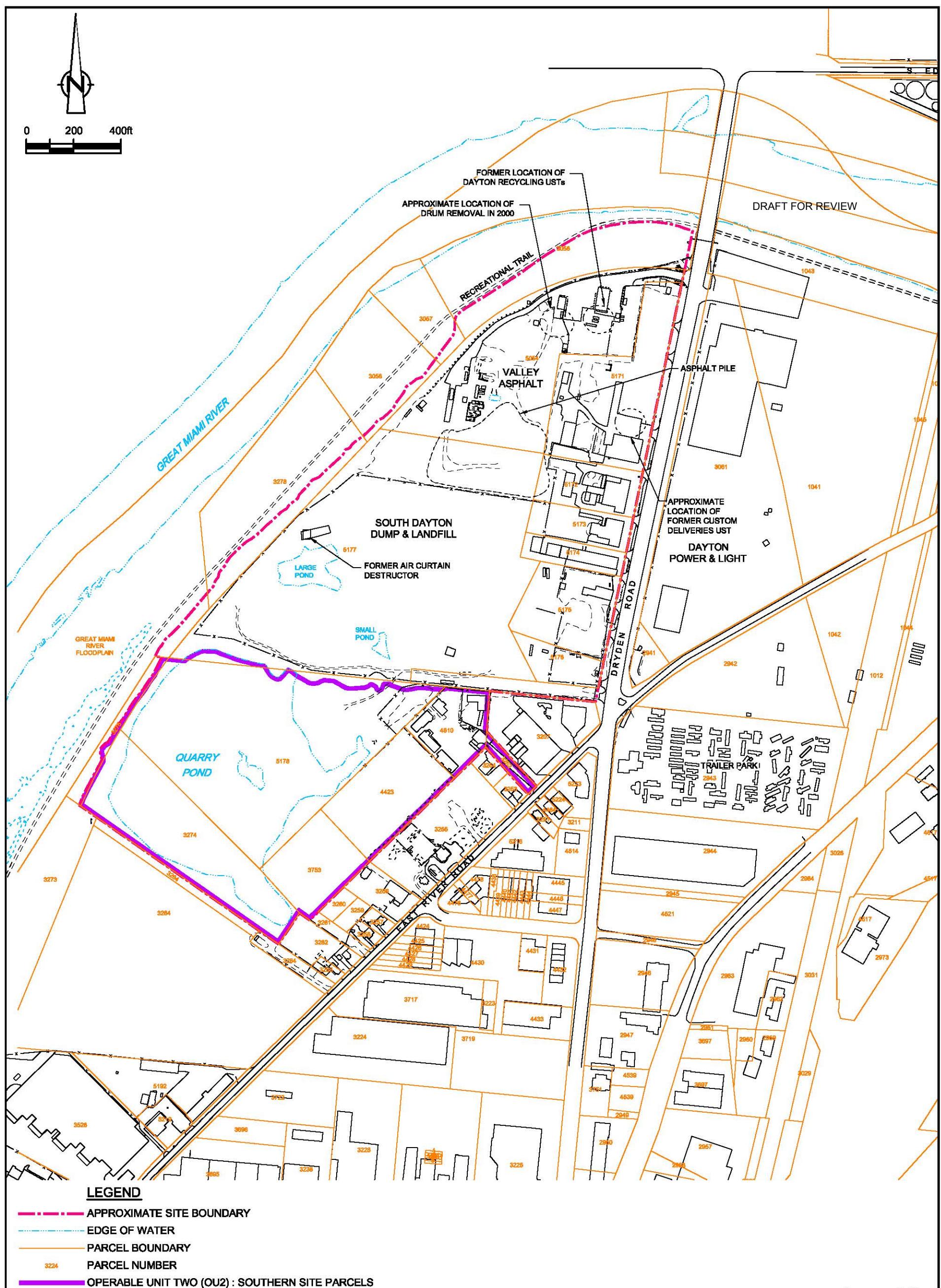
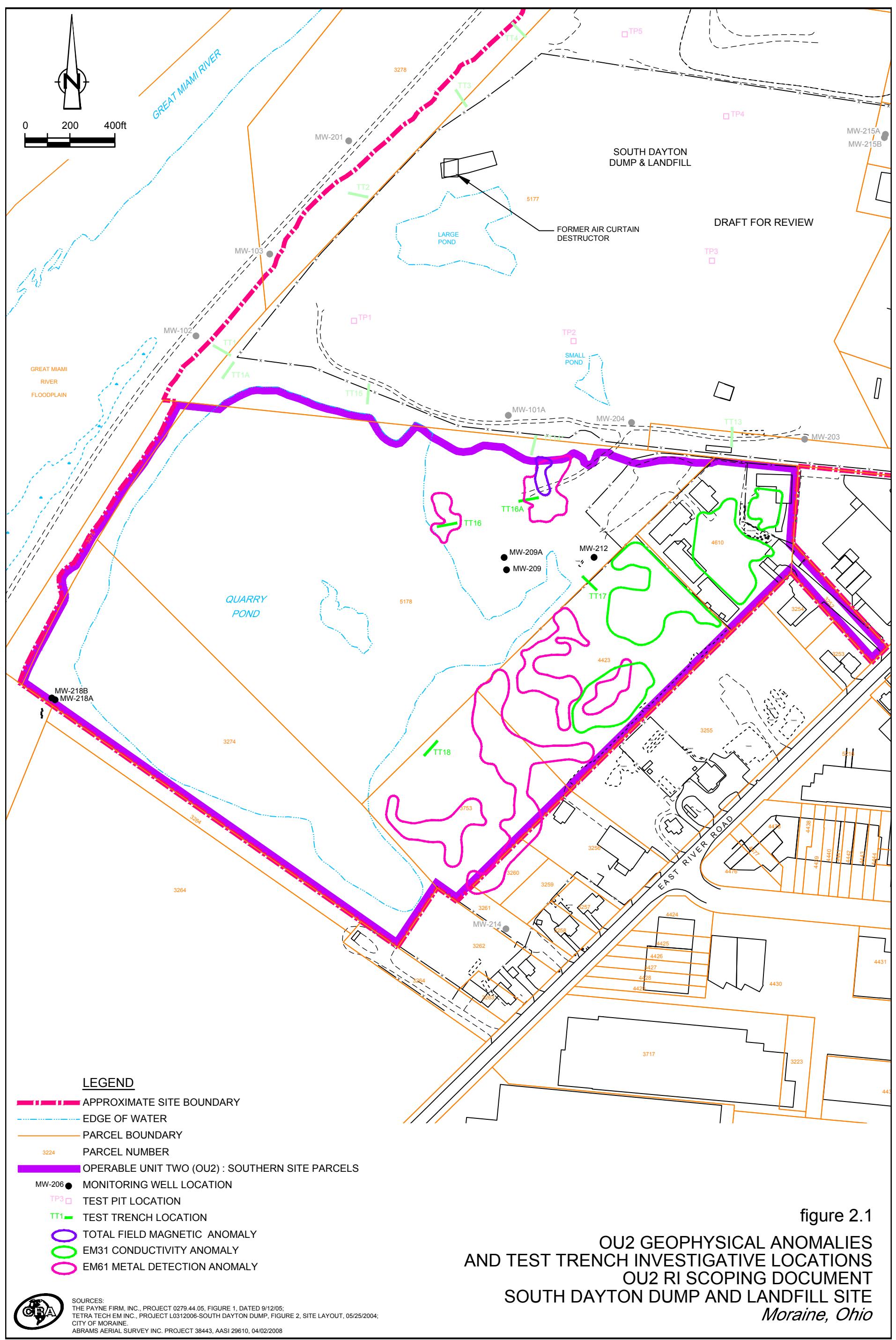


figure 1.2

**SITE LIMITS AND LAYOUT
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
*Moraine, Ohio***



SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312008-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORaine.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 28610, 04/02/2008



38443-14(019)GN-WA002 APR 26/2013

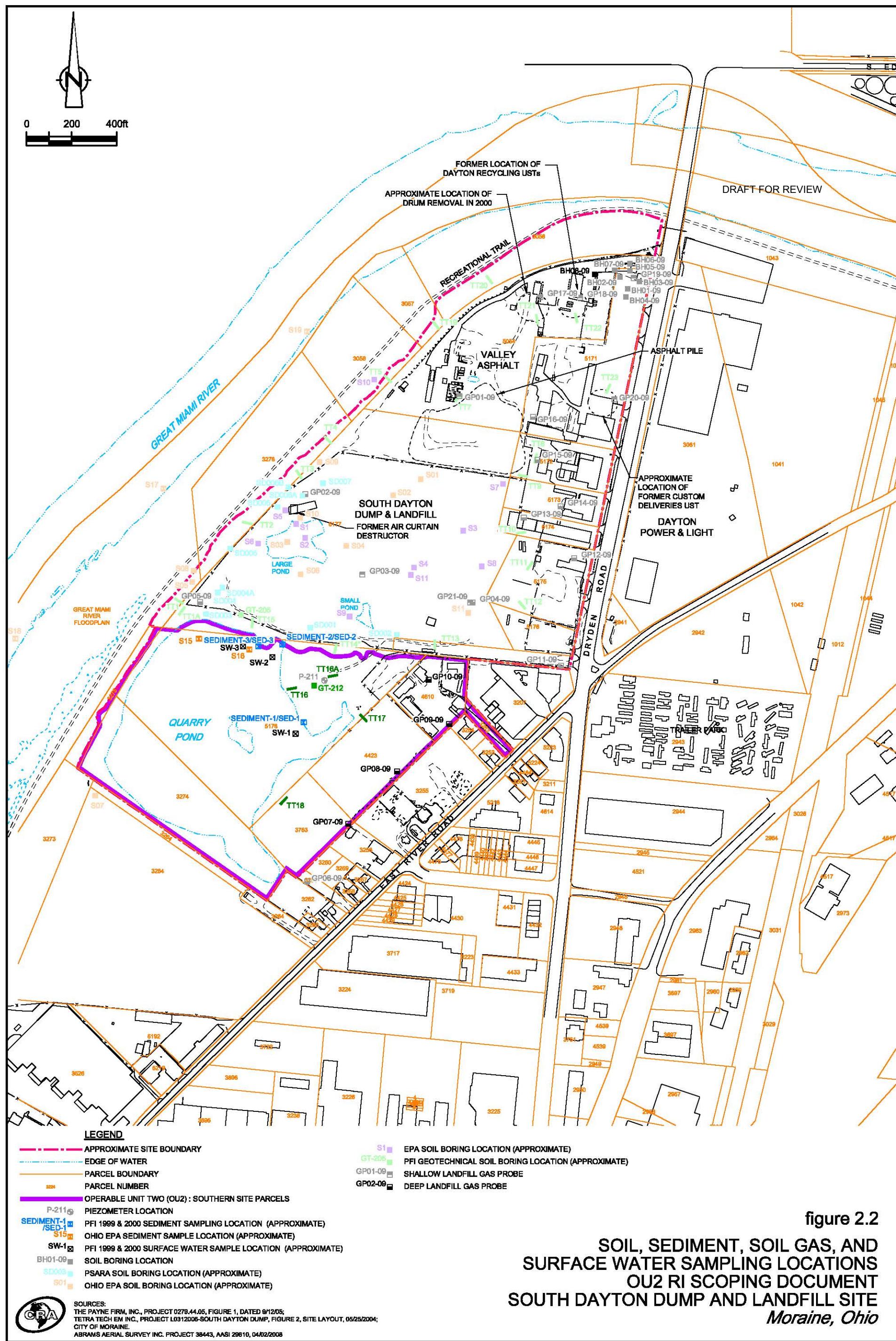
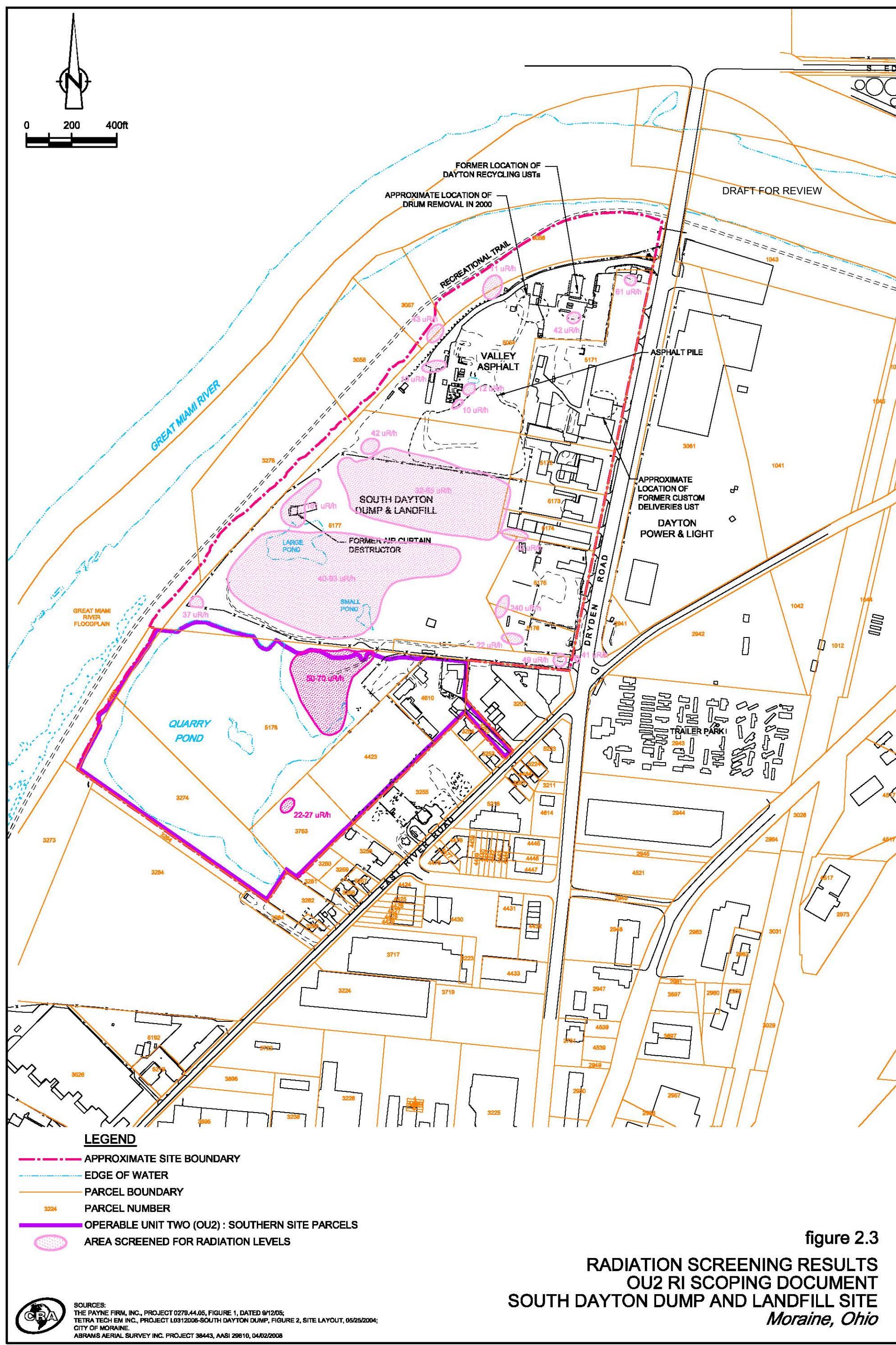


figure 2.2
SOIL, SEDIMENT, SOIL GAS, AND
SURFACE WATER SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio



38443-14(019)GN-WA009 APR 11/2013

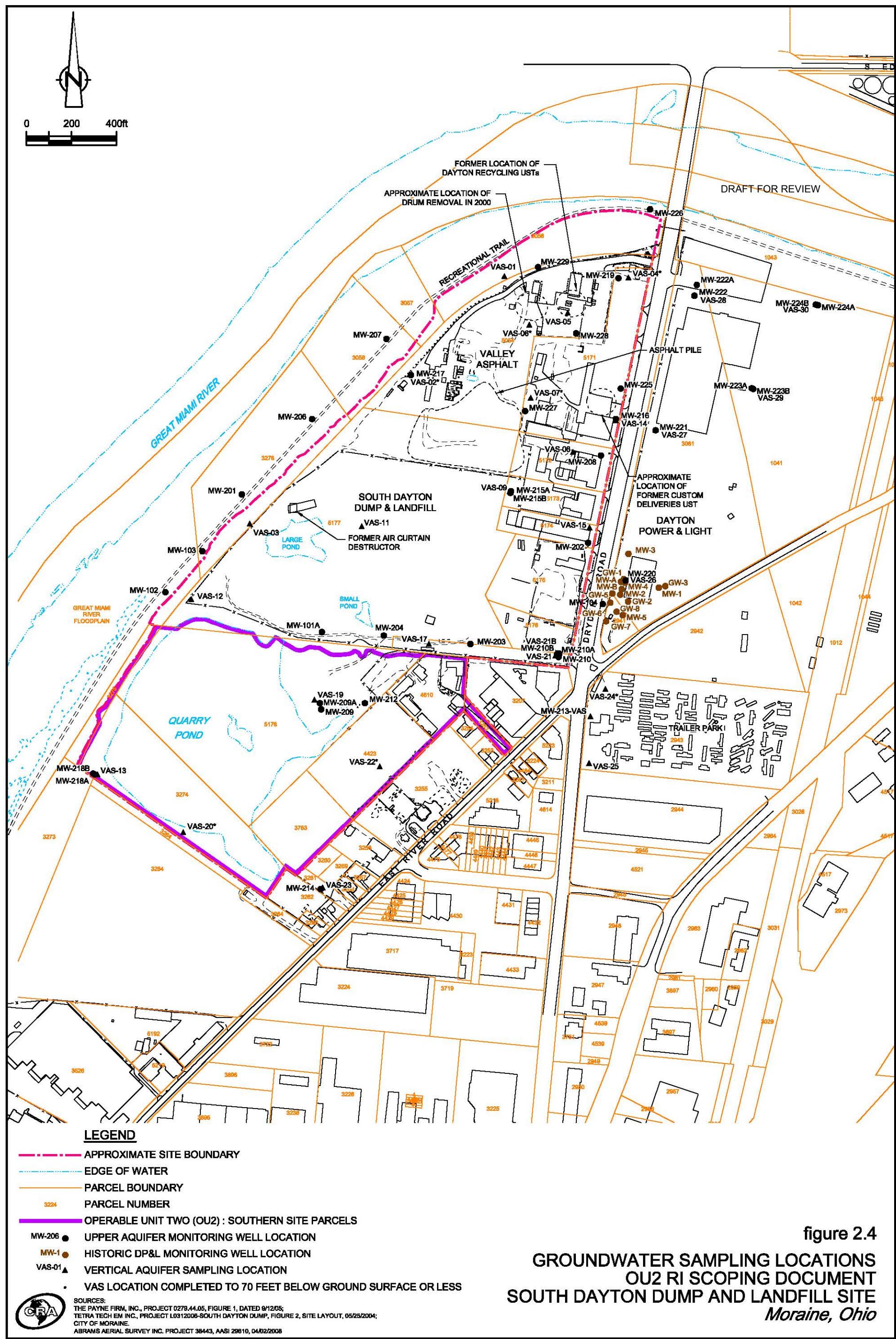


figure 2.4
GROUNDWATER SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

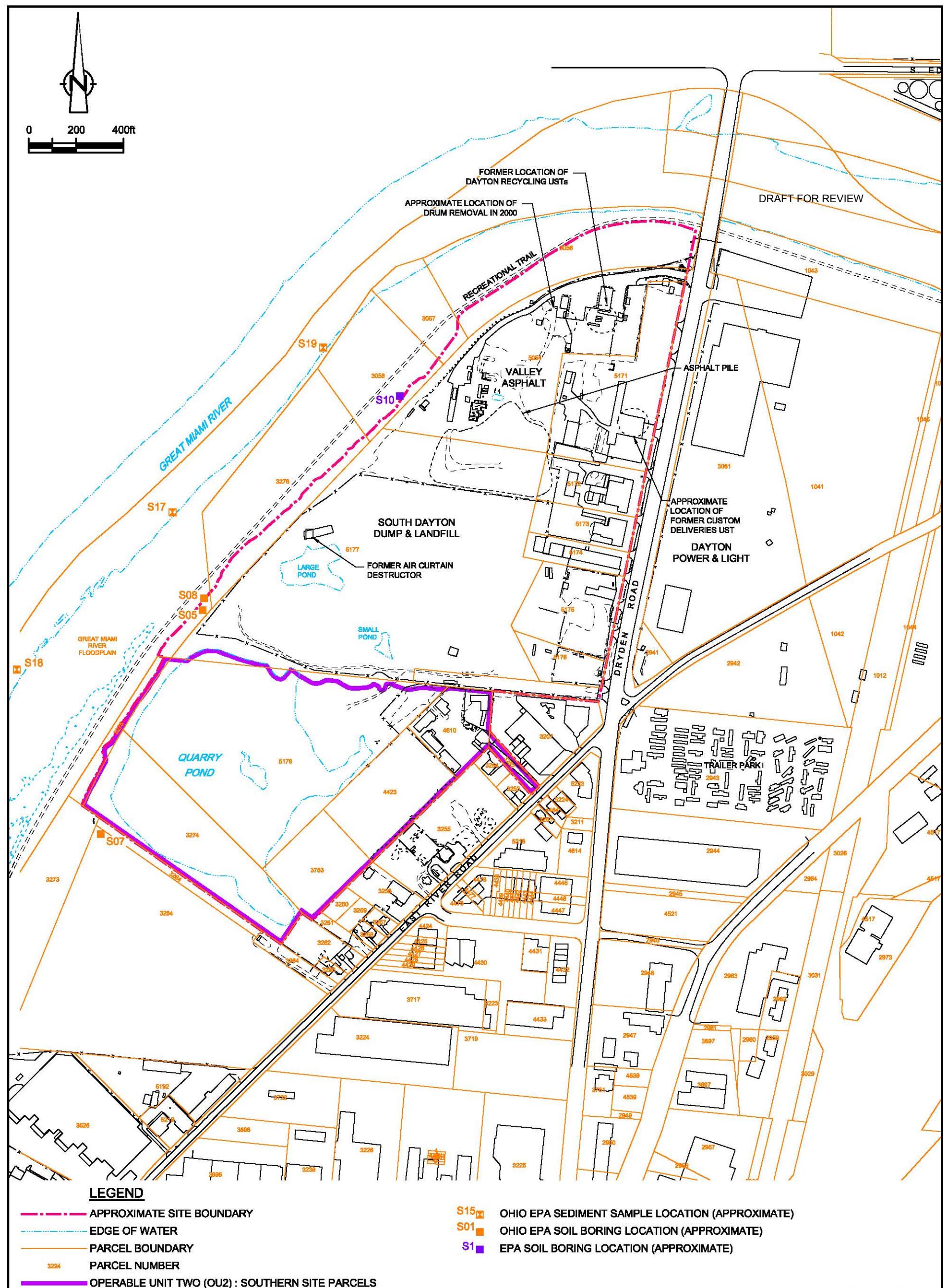
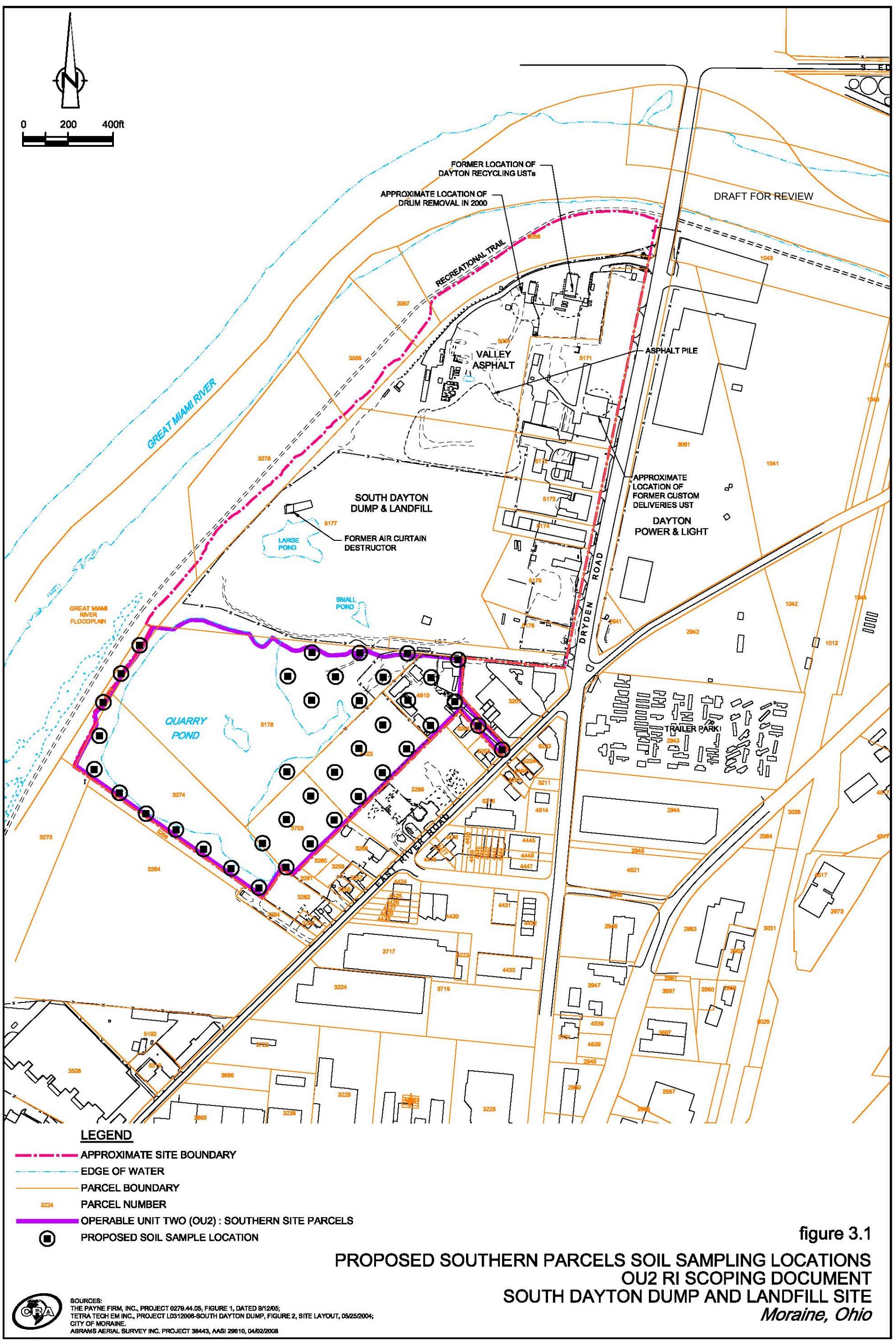


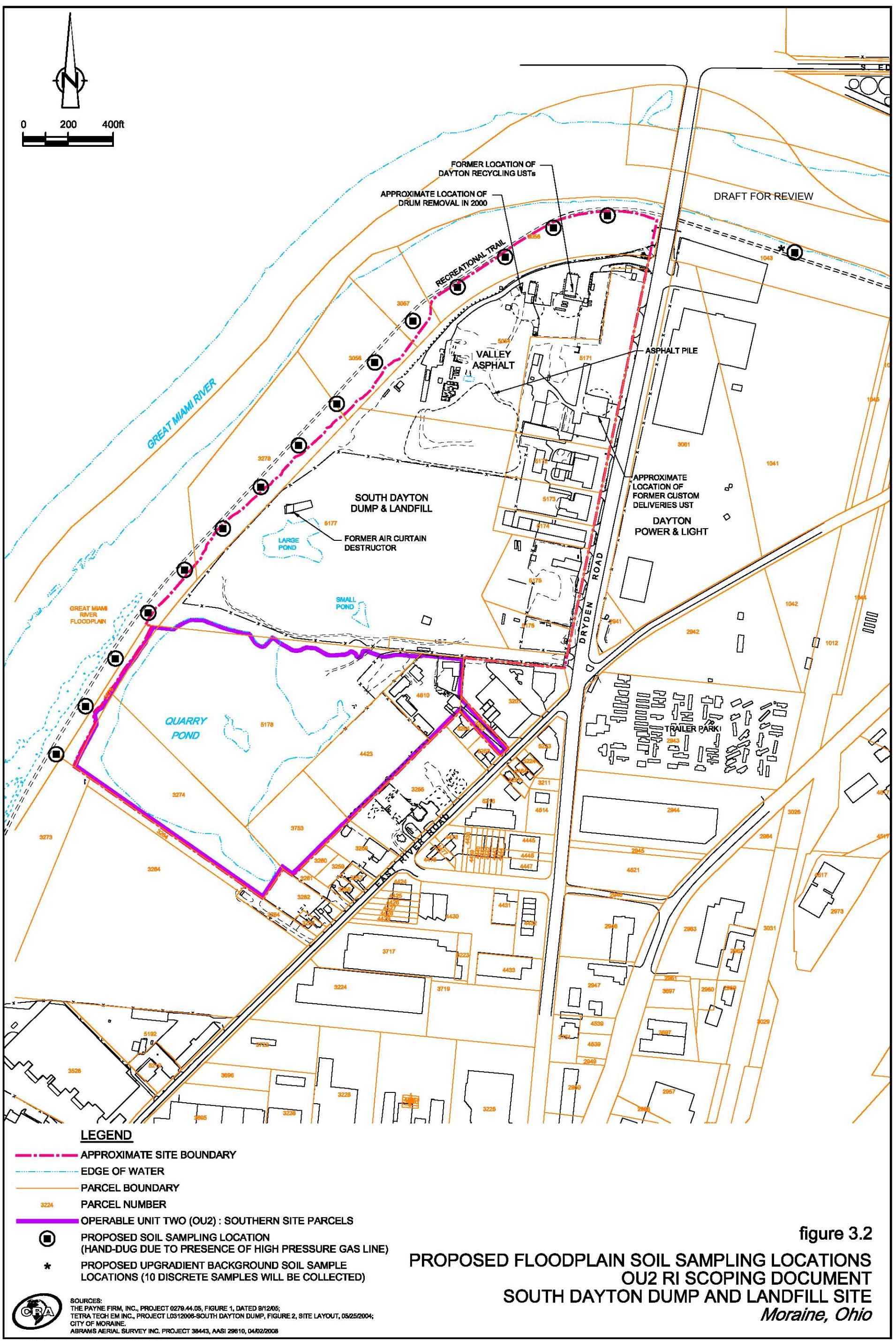
figure 2.5

**GREAT MIAMI RIVER SOIL AND SEDIMENT SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE**



SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORaine.
APRAMS AERIAL SURVEY INC, PROJECT 38443, ASI 29510, 04/22/2008.





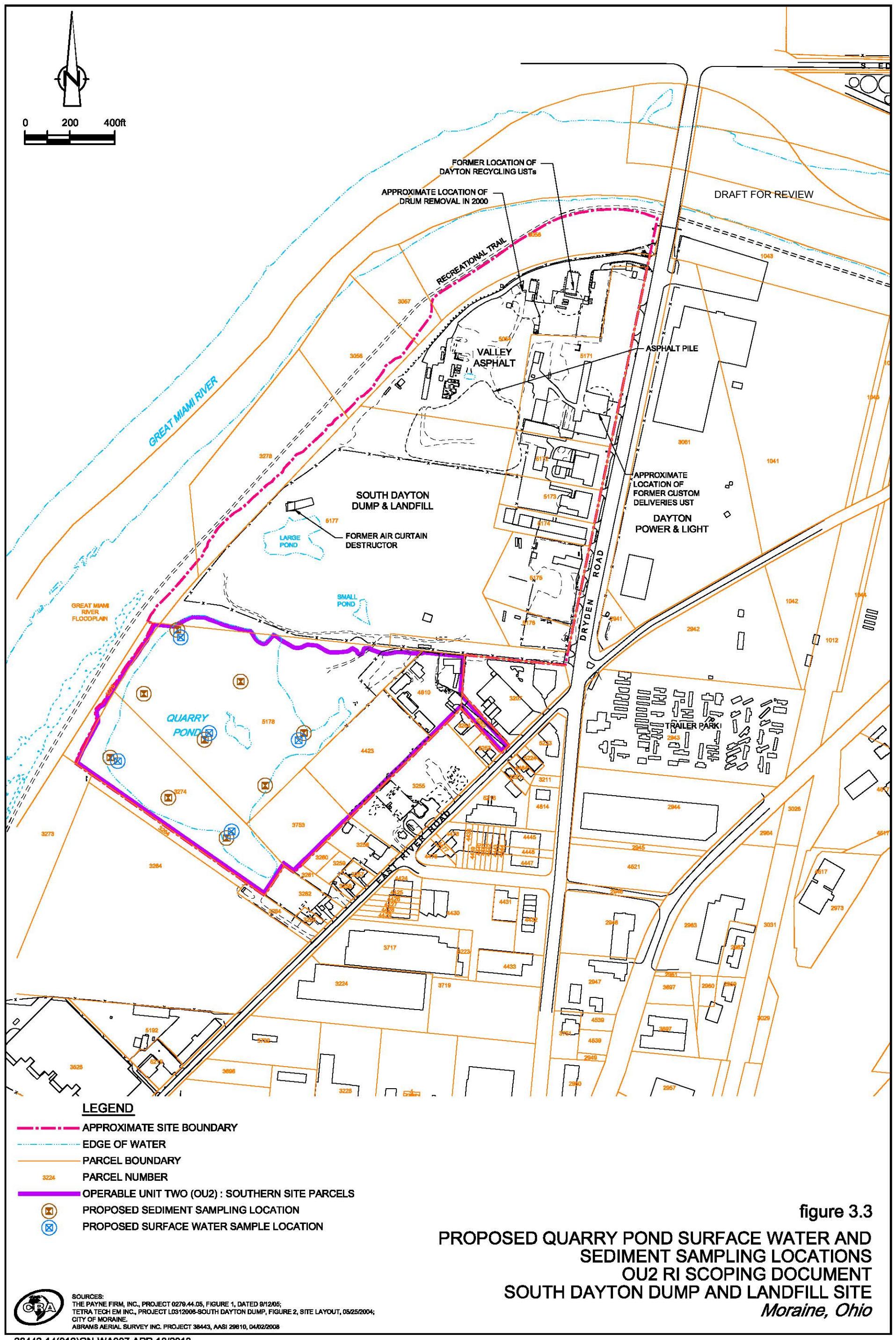


figure 3.3

**PROPOSED QUARRY POND SURFACE WATER AND
SEDIMENT SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE**



SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORaine.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

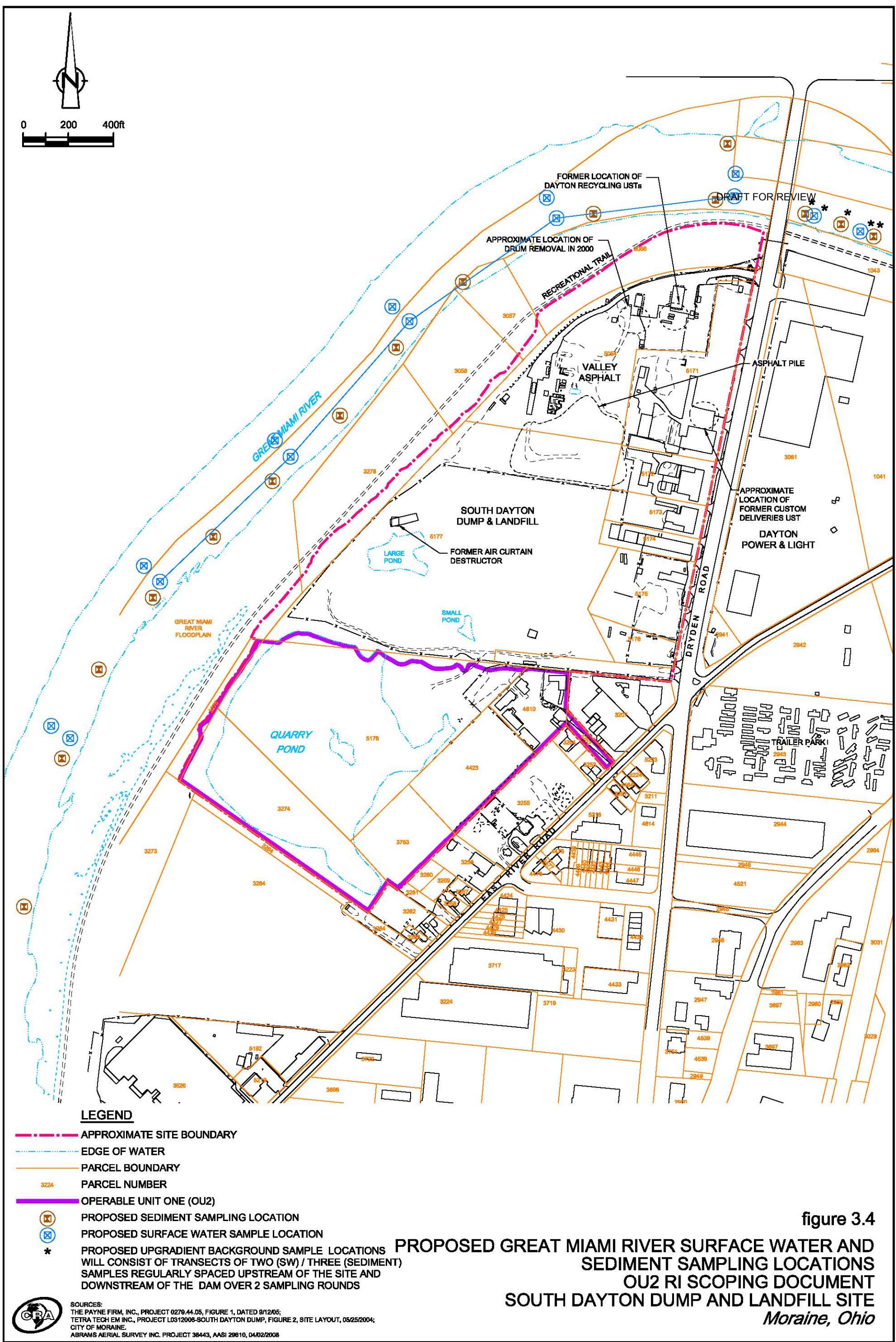


figure 3.4

TABLE 2.1

**HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO**

Sample Location:	S10(EPA)	S07(OEPA)	S08(OEPA)	TT-16	TT-17	TT-17	TT-18	TT-18
Sample ID:	S10	96-DV-03-S07	96-DV-03-S08	S-38443-093008-KMV-033	S-38443-093008-KMV-034	S-38443-093008-KMV-035	S-38443-100108-KMV-036	S-38443-100108-KMV-037
Sample Date:	10/23/1990	7/9/1996	7/9/1996	9/30/2008	9/30/2008	9/30/2008	10/1/2008	10/1/2008
Sample Depth:	0-1 ft BWS	0-0.2 ft BWS	0.2-0.3 ft BWS	2 ft BWS	5 ft BWS	14 ft BWS	5 ft BWS	12 ft BWS
Parameter	Residential Soil	Industrial Soil						
	Criteria a	Criteria b						
Volatiles								
1,1,1-Trichloroethane	8700	38000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,1,2,2-Tetrachloroethane	0.56	2.8	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,1,2-Trichloroethane	1.1	5.3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,1-Dichloroethane	3.3	17	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,1-Dichloroethene	240	1100	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,2,4-Trichlorobenzene	22	99	-	-	-	0.0047 U	0.005 U	0.0061 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0054	0.069	-	-	-	0.0094 U	0.01 U	0.012 U
1,2-Dibromoethane (Ethylene dibromide)	0.034	0.17	-	-	-	0.0047 U	0.005 U	0.0061 U
1,2-Dichlorobenzene	1900	9800	-	-	-	0.0047 U	0.005 U	0.0061 U
1,2-Dichloroethane	0.43	2.2	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,2-Dichloroethene (total)	700	9200	0.005 U	0.011 U	0.011 U	-	-	-
1,2-Dichloropropane	0.94	4.7	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
1,3-Dichlorobenzene	-	-	-	-	-	0.0047 U	0.005 U	0.0061 U
1,4-Dichlorobenzene	2.4	12	-	-	-	0.0047 U	0.005 U	0.0061 U
2-Butanone (Methyl ethyl ketone) (MEK)	28000	200000	0.01 U	0.011 U	0.011 U	0.0047 J	0.02 U	0.024 U
2-Hexanone	210	1400	-	0.011 U	0.011 U	0.019 U	0.02 U	0.024 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	5300	53000	0.01 U	0.011 U	0.011 U	0.019 U	0.02 U	0.024 U
Acetone	61000	630000	0.005 U	0.011 U	0.011 U	0.013 J	0.02 U	0.024 U
Benzene	1.1	5.4	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Bromodichloromethane	0.27	1.4	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Bromoform	62	220	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Bromomethane (Methyl bromide)	7.3	32	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Carbon disulfide	820	3700	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Carbon tetrachloride	0.61	3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Chlorobenzene	290	1400	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Chloroethane	15000	61000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Chloroform (Trichloromethane)	0.29	1.5	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Chloromethane (Methyl chloride)	120	500	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
cis-1,2-Dichloroethene	160	2000	-	-	-	0.0047 U	0.005 U	0.0061 U
cis-1,3-Dichloropropene	-	-	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Cyclohexane	7000	29000	-	-	-	0.0094 U	0.01 U	0.012 U
Dibromochloromethane	0.68	3.3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Dichlorodifluoromethane (CFC-12)	94	400	-	-	-	0.0047 U	0.005 U	0.0061 U
Ethylbenzene	5.4	27	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Isopropyl benzene	2100	11000	-	-	-	0.0047 U	0.005 U	0.0061 U
Methyl acetate	78000	1000000	-	-	-	0.0094 U	0.01 U	0.012 U
Methyl cyclohexane	-	-	-	-	-	0.0094 U	0.01 U	0.012 U
Methyl tert butyl ether (MTBE)	43	220	-	-	-	0.019 U	0.02 U	0.024 U
Methylene chloride	56	960	-	0.011 JB	0.016	0.0047 U	0.005 U	0.0061 U
Styrene	6300	36000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Tetrachloroethene	22	110	0.005 U	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Toluene	5000	45000	0.005 U	0.011 U	0.01 J	0.0047 U	0.005 U	0.0061 U
trans-1,2-Dichloroethene	150	690	-	-	-	0.0047 U	0.005 U	0.0061 U
trans-1,3-Dichloropropene	-	-	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Trichloroethene	0.91	6.4	0.005 U	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Trichlorofluoromethane (CFC-11)	790	3400	-	-	-	0.0047 U	0.005 U	0.0061 U
Trifluorotrichloroethane (Freon 113)	43000	180000	-	-	-	0.0047 U	0.005 U	0.0061 U
Vinyl chloride	0.06	1.7	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U
Xylenes (total)	630	2700	0.005 U	0.011 U	0.011 U	0.0094 U	0.01 U	0.012 U
Semi-Volatiles								
1,2,4-Trichlorobenzene	22	99	-	0.38 U	0.37 U	-	-	-
1,2-Dichlorobenzene	1900	9800	-	0.38 U	0.37 U	-	-	-
1,3-Dichlorobenzene	-	-	-	0.38 U	0.37 U	-	-	-
1,4-Dichlorobenzene	2.4	12	-	0.38 U	0.37 U	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	4.6	22	-	-	-	0.24 U	0.11 U	0.5 U
2,4,5-Trichlorophenol	6100	62000	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U
2,4,6-Trichlorophenol	44	160	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U
2,4-Dichlorophenol	180	1800	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U
2,4-Dimethylphenol	1200	12000	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U
2,4-Dinitrophenol	120	1200	-	0.94 U	0.92 U	0.79 U	0.36 U	1.6 U
2,4-Dinitrotoluene	1.6	5.5	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U
2,6-Dinitrotoluene	61	620	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U
2-Chloronaphthalene	6300	82000	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
2-Chlorophenol	390	5100	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
2-Methylnaphthalene	230	2200	0.33 U	0.38 U	0.39	0.016 U	0.0073 U	0.042
2-Methylphenol	3100	31000	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U
2-Nitroaniline	610	6000	-	0.94 U	0.92 U	0.48 U	0.22 U	1 U
2-Nitrophenol	-	-	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
3,3'-Dichlorobenzidine	1.1	3.8	-	-	-	0.24 U	0.11 U	0.5 U
3-Nitroaniline	-	-	-	0.94 U	0.92 U	0.48 U	0.22 U	1 U
4,6-Dinitro-2-methylphenol	4.9	49	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U
4-Bromophenyl phenyl ether	-	-	-	0.38 U				

TABLE 2.1
HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:		S10(EPA)	S07(OEPA)	S08(OEPA)	TT-16	TT-17	TT-17	TT-18	TT-18
Sample ID:		S10	96-DV-03-S07	96-DV-03-S08	S-38443-093008-KMV-033	S-38443-093008-KMV-034	S-38443-093008-KMV-035	S-38443-100108-KMV-036	S-38443-100108-KMV-037
Sample Date:		10/23/1990	7/9/1996	7/9/1996	9/30/2008	9/30/2008	9/30/2008	10/1/2008	10/1/2008
Sample Depth:		0-1 ft BWS	0-0.2 ft BWS	0.2-0.3 ft BWS	2 ft BWS	5 ft BWS	14 ft BWS	5 ft BWS	12 ft BWS
Parameter		Residential Soil	Industrial Soil						
		Criteria a	Criteria b						
Hexachlorobutadiene		6.2	22	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
Hexachlorocyclopentadiene		370	3700	-	0.38 U	0.37 U	0.79 U	0.36 U	1.6 U
Hexachloroethane		12	43	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
Indeno(1,2,3-cd)pyrene		0.15	2.1	0.97 ^a	0.048 J	0.48 ^a	0.54 ^a	0.055	0.53 ^a
Isophorone		510	1800	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
Naphthalene		3.6	18	0.33 U	0.38 U	0.25 J	0.016 U	0.0073 U	0.11
Nitrobenzene		4.8	24	-	0.38 U	0.37 U	0.24 U	0.11 U	0.5 U
N-Nitrosodi-n-propylamine		0.069	0.25	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
N-Nitrosodiphenylamine		99	350	0.33 U	0.38 U	0.027 J	0.12 U	0.055 U	0.25 U
Pentachlorophenol		0.89	2.7	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U
Phenanthrene		-	-	1.8	0.063 J	1.7	0.85	0.14	3.4
Phenol		18000	180000	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U
Pyrene		1700	17000	3.4	0.13 J	1.9	1.4	0.18	2.9
Metals									
Aluminum		77000	990000	10600	6890	14300	5270	6830	3180
Antimony		31	410	2.4 U	0.68 U	278 ^a	7.2 UJ	6.6 UJ	0.65 J
Arsenic		0.39	1.6	8.1 ^{ab}	6.0 ^{ab}	141 ^{ab}	5.5 ^{ab}	6.3 ^{ab}	10.9 ^{ab}
Barium		15000	190000	120	112	13000	53.8	78.0	73.0
Beryllium		160	200	0.35 B	0.62 B	0.77 B	0.24 J	0.33 J	0.36 J
Cadmium		70	800	1 U	0.57 B	0.69 B	0.29 J	0.18 J	0.11 J
Calcium		-	-	83700	12900	5410	91200 J	50600 J	27500 J
Chromium		-	-	27.6	17.3	62.0	7.8	10.4	8.1
Cobalt		23	300	4.7 B	6.6 B	17.5	4.8 J	6.3	2.6 J
Copper		3100	41000	37.6 EJ	22.5	1830	12.6	12.3	21.3
Iron		55000	720000	16300	13200	59500 ^a	11200	14200	12000
Lead		400	800	94.8	31.5	652 ^a	18.4 J	14.9 J	7.5 J
Magnesium		-	-	28000	6100	2480	44300	13800	13400
Manganese		1800	23000	446	681	614	624 J	441 J	76.0 J
Mercury		10	43	0.008 U	0.18	0.11 U	0.035 J	0.040 J	0.054 J
Nickel		1500	20000	23.1	12.9	78.3	10.7	11.0	7.5
Potassium		-	-	1190 B	886 B	1400	960 J	725 J	399 J
Selenium		390	5100	2.6	0.90 U	2.1	30.0 U	27.5 U	1.1 J
Silver		390	5100	1.1 B	0.45 B	0.23 B	1.2 U	1.1 U	1.2 U
Sodium		-	-	136 B	207 B	254 B	162 J	550 U	625 U
Thallium		0.78	10	2 U	2.2 B ^a	4.0 ^a	0.14 U	0.15 U	0.46
Vanadium		390	5200	24.3	17.4	18.5	14.5 J	18.1 J	13.8 J
Zinc		23000	310000	126	76.9	286	42.4 J	40.0 J	27.3 J
PCBs									
Aroclor-1016 (PCB-1016)		3.9	21	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U
Aroclor-1221 (PCB-1221)		0.14	0.54	-	0.076 U	0.074 U	0.04 UJ	0.036 UJ	0.041 U
Aroclor-1232 (PCB-1232)		0.14	0.54	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U
Aroclor-1242 (PCB-1242)		0.22	0.74	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U
Aroclor-1248 (PCB-1248)		0.22	0.74	1.4 X ^{ab}	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.059
Aroclor-1254 (PCB-1254)		0.22	0.74	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U
Aroclor-1260 (PCB-1260)		0.22	0.74	0.41 X ^a	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.045 UJ
Pesticides									
4,4'-DDD		2	7.2	-	0.00065 J	0.0037 U	0.1 UJ	0.19 UJ	0.042 UJ
4,4'-DDE		1.4	5.1	-	0.0038 U	0.0024 PJ	0.1 U	0.19 U	0.042 U
4,4'-DDT		1.7	7	-	0.0016 PJ	0.0088 P	0.1 UJ	0.19 UJ	0.042 UJ
Aldrin		0.029	0.1	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
alpha-BHC		0.077	0.27	-	0.0019 U	0.00071 PJ	0.1 U	0.19 U	0.042 U
alpha-Chlordane		-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
beta-BHC		0.27	0.96	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
delta-BHC		-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
Dieldrin		0.03	0.11	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U
Endosulfan I		-	-	-	0.00042 PJ	0.0019 U	0.1 U	0.19 U	0.042 U
Endosulfan II		-	-	-	0.0014 J	0.0054	0.1 U	0.19 U	0.042 U
Endosulfan sulfate		-	-	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U
Endrin		18	180	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U
Endrin aldehyde		-	-	-	0.0064 P	0.0037 U	0.1 U	0.19 U	0.042 U
Endrin ketone		-	-	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U
gamma-BHC (lindane)		0.52	2.1	-	0.0019 U	0.0018 J	0.1 U	0.19 U	0.042 U
gamma-Chlordane		-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
Heptachlor		0.11	0.38	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
Heptachlor epoxide		0.053	0.19	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U
Methoxychlor		310	3100	-	0.019 U	0.019 U	0.2 UJ	0.36 UJ	0.082 UJ
Toxaphene		0.44	1.6	-	0.19 U	0.19 U	4 UJ	7.4 UJ	1.7 UJ
Herbicides									
2,4,5-TP (Silvex)		490	4900	-	-	0.024 U	0.022 U	0.025 U	0.027 U
2,4-Dichlorophenoxyacetic acid (2,4-D)		690	7700	-	-	0.096 U	0.088 U	0.1 U	0.11 U
General Chemistry									
Cyanide (total)		22</td							

TABLE 2.2

**HISTORIC SURFACE WATER ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO**

Parameter	USEPA Regional Screening Levels [1]			Ecological Screening Value Reference [2]	SW-1-99	SW-1-00	SW-2-99	SW-2-00	SW-3-99	SW-3-00
	MCL	TapWater	Ecological Screening Value		SW-1	SW-1	SW-2	SW-2	SW-3	SW-3
	a	b	c		4/16/1999	5/12/2000	4/16/1999	5/12/2000	4/16/1999	5/12/2000
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.076	O OMZA	0.0050 U					
1,1,2,2-Tetrachloroethane	-	0.000066	0.26	O OMZA	0.0050 U					
1,1,2-Trichloroethane	0.005	0.00024	0.74	O OMZA	0.0050 U					
1,1-Dichloroethane	-	0.0024	0.047	EPA R V	0.0050 U					
1,1-Dichloroethene	0.007	0.26	0.21	O OMZA	0.0050 U					
1,2-Dichloroethane	0.005	0.00015	2	O OMZA	0.0050 U					
1,2-Dichloroethene (total)	-	0.13	-	-	0.0050 U					
1,2-Dichloropropane	0.005	0.00038	0.36	EPA R V	0.0050 U					
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	22	O OMZA	0.02 U					
2-Hexanone	-	0.034	-	-	0.02 U					
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.17	EPA R V	0.02 U					
Acetone	-	12	1.7	EPA R V	0.02 U					
Benzene	0.005	0.00039	0.16	O OMZA	0.0050 U					
Bromodichloromethane	0.08	0.00012	-	-	0.0050 U					
Bromoform	0.08	0.0079	0.23	O OMZA	0.0050 U					
Bromomethane (Methyl bromide)	-	0.007	0.016	EPA R V	0.01 U					
Carbon disulfide	-	0.72	0.015	O OMZA	0.0050 U					
Carbon tetrachloride	0.005	0.00039	0.24	O OMZA	0.0050 U					
Chlorobenzene	0.1	0.072	0.047	O OMZA	0.0050 U					
Chloroethane	-	21	1.1	M. C.	0.01 U					
Chloroform (Trichloromethane)	0.08	0.00019	0.14	O OMZA	0.0050 U					
Chloromethane (Methyl chloride)	-	0.19	-	-	0.01 U					
cis-1,3-Dichloropropene	-	-	-	-	0.0050 U					
Dibromochloromethane	0.08	0.00015	-	-	0.0050 U					
Ethylbenzene	0.7	0.0013	0.061	O OMZA	0.0050 U					
Methylene chloride	0.005	0.0099	1.9	O OMZA	0.0050 U					
Styrene	0.1	1.1	0.032	O OMZA	0.0050 U					
Tetrachloroethene	0.005	0.0097	0.053	O OMZA	0.0050 U					
Toluene	1	0.86	0.062	O OMZA	0.0050 U					
trans-1,3-Dichloropropene	-	-	-	-	0.0050 U					
Trichloroethene	0.005	0.00044	0.22	O OMZA	0.0050 U					
Vinyl chloride	0.002	0.000015	0.93	O OMZA	0.01 U					
Xylenes (total)	10	0.19	0.027	O OMZA	0.0050 U					

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

MCL - Maximum contaminant level.

U - Compound was analyzed for but not detected.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012

[2] - Ohio OMZA: Ohio River Basin Aquatic Life and Human Health Tier I Criteria and Tier II Values, Outside Mixing Zone Area OAC 3745-1-32, July 27, 2005.

USEPA NRWQC: National Recommended Water Quality Criteria, EPA-822-R-02-047, Continuous Chronic Concentration, Office of Water, November 2002.

EPA Region V: Ecological Data Quality Levels, August 22, 2003. Available on the Internet at <http://www.epa.gov/Region5/rccraa/edql.html>

TABLE 2.3

**HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINA, OHIO**

<i>Sample Location:</i> [2]		<i>S15(OEPA)</i>	<i>S16(OEPA)</i>	<i>S17(OEPA)</i>	<i>S17(OEPA)</i>	<i>S18(OEPA)</i>	<i>S19(OEPA)</i>	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample ID:</i> [2]		96-DV-03-S15	96-DV-03-S16	96-DV-03-S17	96-DV-03-D17	96-DV-03-S18	96-DV-03-S19	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample Date:</i>		7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	4/16/1999	5/12/2000	4/16/1999	5/12/2000	4/16/1999	5/12/2000
<i>Sample Depth:</i>		15-18 ft BWS	15-18 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	-	-	-	-	-	-
<i>Sample Location:</i>	<i>USEPA Regional Screening Levels [1]</i>	<i>Quarry Pond</i>	<i>Quarry Pond</i>	<i>GMR</i>	<i>GMR</i>	<i>GMR</i>	<i>GMR</i>	<i>Quarry Pond</i>					
<i>Parameter</i>	<i>Residential Soil</i>	<i>Industrial Soil</i>	<i>Criteria</i>	<i>Criteria</i>	<i>a</i>	<i>b</i>							
<u>Volatiles</u>													
1,1,1-Trichloroethane	8700	38000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Tetrachloroethane	0.56	2.8	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Trichloroethane	1.1	5.3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethane	3.3	17	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethene	240	1100	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethane	0.43	2.2	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethene (total)	700	9200	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloropropane	0.94	4.7	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
2-Butanone (Methyl ethyl ketone) (MEK)	28000	200000	0.026 U	0.01 J	0.015 U	0.014 U	0.005 J	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-Hexanone	210	1400	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	5300	53000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Acetone	61000	630000	0.047	0.043	0.015 U	0.014 U	0.033	0.019	0.02 U	0.02 U	0.02 U	0.02 U	0.037
Benzene	1.1	5.4	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromodichloromethane	0.27	1.4	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromoform	62	220	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromomethane (Methyl bromide)	7.3	32	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Carbon disulfide	820	3700	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Carbon tetrachloride	0.61	3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chlorobenzene	290	1400	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloroethane	15000	61000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chloroform (Trichloromethane)	0.29	1.5	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloromethane (Methyl chloride)	120	500	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
cis-1,3-Dichloropropene	-	-	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Dibromochloromethane	0.68	3.3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Ethylbenzene	5.4	27	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Methylene chloride	56	960	0.026 BUJ	0.029 BUJ	0.015 BUJ	0.014 BUJ	0.018 BUJ	0.018 BUJ	0.0050 U				
Styrene	6300	36000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Tetrachloroethene	22	110	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Toluene	5000	45000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.014
trans-1,3-Dichloropropene	-	-	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Trichloroethene	0.91	6.4	0.0008 J	0.029 U	0.0007 J	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Vinyl chloride	0.06	1.7	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Xylenes (total)	630	2700	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
<u>Semi-Volatiles</u>													
1,2,4-Trichlorobenzene	22	99	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
1,2-Dichlorobenzene	1900	9800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
1,3-Dichlorobenzene	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
1,4-Dichlorobenzene	2.4	12	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
2,4,5-Trichlorophenol	6100	62000	2.1 U	2.4 U									

TABLE 2.3

**HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINA, OHIO**

<i>Sample Location:</i> [2]		S15(OEPA) 96-DV-03-S15	S16(OEPA) 96-DV-03-S16	S17(OEPA) 96-DV-03-S17	S17(OEPA) 96-DV-03-D17	S18(OEPA) 96-DV-03-S18	S19(OEPA) 96-DV-03-S19	SEDIMENT-1 4/16/1999	SED-1 5/12/2000	SEDIMENT-2 4/16/1999	SED-2 5/12/2000	SEDIMENT-3 4/16/1999	SED-3 5/12/2000
<i>Sample ID:</i> [2]													
<i>Sample Date:</i>		7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996						
<i>Sample Depth:</i>		15-18 ft BWS	15-18 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	-	-	-	-	-	-
<i>Sample Location:</i>		USEPA Regional Screening Levels [1]	Quarry Pond	Quarry Pond	GMR	GMR	GMR	Quarry Pond	Quarry Pond	Quarry Pond	Quarry Pond	Quarry Pond	Quarry Pond
<i>Parameter</i>		Residential Soil Criteria <i>a</i>	Industrial Soil Criteria <i>b</i>										
3-Nitroaniline	-	-	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
4,6-Dinitro-2-methylphenol	4.9	49	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
4-Chloro-3-methylphenol	6100	62000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
4-Chloroaniline	2.4	8.6	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
4-Methylphenol	6100	62000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
4-Nitroaniline	24	86	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
4-Nitrophenol	-	-	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
Acenaphthene	3400	33000	0.059 J	0.092 J	0.021 J	0.015 J	0.04 J	0.089 J	-	-	-	-	-
Acenaphthylene	-	-	0.85 U	0.061 J	0.16 J	0.15 J	0.014 J	0.022 J	-	-	-	-	-
Anthracene	17000	170000	0.11 J	0.23 J	0.4 J	0.39 J	0.075 J	0.17 J	-	-	-	-	-
Benzo(a)anthracene	0.15	2.1	0.49 J^a	1.5^a	2.2^{ab}	2.1^a	0.6^a	1.3^a	-	-	-	-	-
Benzo(a)pyrene	0.015	0.21	0.46 J^{ab}	1.8^{ab}	2.1^{ab}	2.1^{ab}	0.58^{ab}	1.1^{ab}	-	-	-	-	-
Benzo(b)fluoranthene	0.15	2.1	0.8^a	2.5^{ab}	2.7^{ab}	2.3^{ab}	1^a	1.8^a	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.49 J	2	2.2	1.6	0.66	1.4	-	-	-	-	-
Benzo(k)fluoranthene	1.5	21	0.3 J	0.95	0.93	0.93	0.41 J	0.69	-	-	-	-	-
bis(2-Chloroethoxy)methane	180	1800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
bis(2-Chloroethyl)ether	0.21	1	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	35	120	0.85 U	0.47 J	0.5 U	0.084 J	0.33 J	0.36 J	-	-	-	-	-
Butyl benzylphthalate (BBP)	260	910	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.084 J	-	-	-	-	-
Carbazole	-	-	0.085 J	0.11 J	0.02 J	0.015 J	0.084 J	0.19 J	-	-	-	-	-
Chrysene	15	210	0.55 J	1.5	2.5	2.1	0.71	1.5	-	-	-	-	-
Dibenz(a,h)anthracene	0.015	0.21	0.12 J^a	0.48 J^{ab}	0.43^{ab}	0.32^{ab}	0.15 J^a	0.31 J^{ab}	-	-	-	-	-
Dibenzo furan	78	1000	0.07 J	0.095 J	0.011 J	0.007 J	0.034 J	0.1 J	-	-	-	-	-
Diethyl phthalate	49000	490000	0.85 U	0.039 J	0.024 J	0.027 J	0.051 J	0.033 J	-	-	-	-	-
Dimethyl phthalate	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Di-n-butylphthalate (DBP)	6100	62000	0.85 BUJ	0.94 BUJ	0.5 BUJ	0.46 BUJ	0.58 BUJ	0.6 BUJ	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	730	7400	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Fluoranthene	2300	22000	1.1	2.6	2	2	1.4	2.2	-	-	-	-	-
Fluorene	2300	22000	0.076 J	0.16 J	0.053 J	0.043 J	0.06 J	0.13 J	-	-	-	-	-
Hexachlorobenzene	0.3	1.1	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Hexachlorobutadiene	6.2	22	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Hexachlorocyclopentadiene	370	3700	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Hexachloroethane	12	43	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.15	2.1	0.46 J^a	1.9^a	1.9^a	1.4^a	0.65^a	1.4^a	-	-	-	-	-
Isophorone	510	1800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Naphthalene	3.6	18	0.07 J	0.077 J	0.031 J	0.025 J	0.018 J	0.063 J	-	-	-	-	-
Nitrobenzene	4.8	24	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
N-Nitrosodi-n-propylamine	0.069	0.25	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
N-Nitrosodiphenylamine	99	350	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Pentachlorophenol	0.89	2.7	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
Phenanthrene	-	-	0.89	1.5	0.7	0.61	0.83	1.9	-	-	-	-	-
Phenol	18000	180000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-
Pyrene	1700	17000	1.3	3	4.7 E	3.7 E	1.4	2.7	-	-	-	-	-
Metals													
Aluminum	77000	990000	2750	6590	9750	8450	8940	8600	-	-	-	-	-
Antimony	31	410	9.1 U	13.5 U	7.9 U	8.1 U	10 U	10.1 U	-	-	-	-	-
Arsenic	0.39	1.6	10.3^{ab}	12.6^{ab}	9.2^{ab}	9.2^{ab}	6.0^{ab}	9^{ab}	-	-	-	-	-
Barium	15000	190000	73.0	137	128	125	117	130	-	-	-	-	-
Beryllium	160	2000	0.28 B	0.35 B	0.54 B	0.48 B							

TABLE 2.3

**HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINA, OHIO**

<i>Sample Location:</i> [2]		<i>S15(OEPA)</i>	<i>S16(OEPA)</i>	<i>S17(OEPA)</i>	<i>S17(OEPA)</i>	<i>S18(OEPA)</i>	<i>S19(OEPA)</i>	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample ID:</i> [2]		96-DV-03-S15	96-DV-03-S16	96-DV-03-S17	96-DV-03-D17	96-DV-03-S18	96-DV-03-S19	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample Date:</i>		7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996						
<i>Sample Depth:</i>		15-18 ft BWS	15-18 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS						
<i>Sample Location:</i>		<i>USEPA Regional Screening Levels [1]</i>		<i>Quarry Pond</i>	<i>Quarry Pond</i>	<i>GMR</i>	<i>GMR</i>	<i>GMR</i>	<i>Quarry Pond</i>				
<i>Parameter</i>		<i>Residential Soil</i>	<i>Industrial Soil</i>										
		<i>Criteria</i>	<i>Criteria</i>										
		<i>a</i>	<i>b</i>										
Calcium	-	-	53600	11800	61700	58100	81900	74900	-	-	-	-	-
Chromium	-	-	23.1	17.2	14.9	13.7	18	22.3	-	-	-	-	-
Cobalt	23	300	3.7 B	6.7 B	6.6 B	6.2 B	6.5 B	7.2 B	-	-	-	-	-
Copper	3100	41000	29.3	24.7	29.3	29.0	26	33.5	-	-	-	-	-
Iron	55000	720000	11300	13500	16400	15500	15000	15800	-	-	-	-	-
Lead	400	800	33.7	42.0	51.6	47.2	30.5	47.9	-	-	-	-	-
Magnesium	-	-	13600	21600	17200	16100	24200	20600	-	-	-	-	-
Manganese	1800	23000	205	545	299	258	330	420	-	-	-	-	-
Mercury	10	43	0.08 U	0.12 U	0.63	0.65	0.09 U	0.13 B	-	-	-	-	-
Nickel	1500	20000	13.4	18.7 B	16.2	17.9	19.9	23.7	-	-	-	-	-
Potassium	-	-	297 B	736 B	812 B	709 B	1090 B	991 B	-	-	-	-	-
Selenium	390	5100	1.1 B	0.59 B	0.4 B	0.59 B	0.73 B	0.59 B	-	-	-	-	-
Silver	390	5100	1.4 U	2.1 U	1.2 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-
Sodium	-	-	165 B	206 B	144 B	131 B	191 B	183 B	-	-	-	-	-
Thallium	0.78	10	0.68 B	0.98 U	1.0 B^a	0.66 B	0.84 B^a	0.9 B^a	-	-	-	-	-
Vanadium	390	5200	9.6 B	16.8 B	21.8	19.2	20.2	20	-	-	-	-	-
Zinc	23000	310000	80.7	143	93.6 B	80.4	114	132	-	-	-	-	-
<i><u>PCBs</u></i>													
Aroclor-1016 (PCB-1016)	3.9	21	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-
Aroclor-1221 (PCB-1221)	0.14	0.54	0.18 U	0.19 U	0.1 U	0.093 U	0.12 U	0.12 U	-	-	-	-	-
Aroclor-1232 (PCB-1232)	0.14	0.54	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-
Aroclor-1242 (PCB-1242)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-
Aroclor-1248 (PCB-1248)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-
Aroclor-1254 (PCB-1254)	0.22	0.74	0.66^a	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-
Aroclor-1260 (PCB-1260)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-

TABLE 2.3

**HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINA, OHIO**

<i>Sample Location:</i> [2]	<i>S15(OEPA)</i>	<i>S16(OEPA)</i>	<i>S17(OEPA)</i>	<i>S17(OEPA)</i>	<i>S18(OEPA)</i>	<i>S19(OEPA)</i>	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample ID:</i> [2]	96-DV-03-S15	96-DV-03-S16	96-DV-03-S17	96-DV-03-D17	96-DV-03-S18	96-DV-03-S19	<i>SEDIMENT-1</i>	<i>SED-1</i>	<i>SEDIMENT-2</i>	<i>SED-2</i>	<i>SEDIMENT-3</i>	<i>SED-3</i>
<i>Sample Date:</i>	7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	7/9/1996	4/16/1999	5/12/2000	4/16/1999	5/12/2000	4/16/1999	5/12/2000
<i>Sample Depth:</i>	15-18 ft BWS	15-18 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	0-0.5 ft BWS	-	-	-	-	-	-
<i>Sample Location:</i>	<i>USEPA Regional Screening Levels</i> [1]		<i>Quarry Pond</i>	<i>Quarry Pond</i>	<i>GMR</i>	<i>GMR</i>	<i>GMR</i>	<i>Quarry Pond</i>				
<i>Parameter</i>	<i>Residential Soil</i>	<i>Industrial Soil</i>	<i>Criteria</i>	<i>Criteria</i>	<i>a</i>	<i>b</i>						
Pesticides												
4,4'-DDD	2	7.2	0.0017 JP	0.0094 U	0.0022 JP	0.0049	0.0034 JP	0.0036 JP	-	-	-	-
4,4'-DDE	1.4	5.1	0.0087 U	0.0022 JP	0.0050 U	0.0046 U	0.0026 JP	0.0024 JP	-	-	-	-
4,4'-DDT	1.7	7	0.0044 JP	0.0024 JP	0.0021 JP	0.0022 JP	0.0027 JP	0.0023 JP	-	-	-	-
Aldrin	0.029	0.1	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0013 JP	-	-	-	-
alpha-BHC	0.077	0.27	0.0045 U	0.0049 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-
alpha-Chlordane	-	-	0.012	0.0018 JP	0.00072 JP	0.0024 U	0.0070 P	0.0066 P	-	-	-	-
beta-BHC	0.27	0.96	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-
delta-BHC	-	-	0.0045 U	0.0049 U	0.0014 JP	0.0015 JP	0.0030 U	0.0031 U	-	-	-	-
Dieldrin	0.03	0.11	0.0096 P	0.0026 JP	0.00086 JP	0.0046 U	0.0025 JP	0.0040 JP	-	-	-	-
Endosulfan I	-	-	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-
Endosulfan II	-	-	0.0087 U	0.0094 U	0.0050 U	0.0046 U	0.0058 U	0.0060 U	-	-	-	-
Endosulfan sulfate	-	-	0.0037 JP	0.0094 U	0.0050 U	0.0046 U	0.0030 JP	0.0060 U	-	-	-	-
Endrin	18	180	0.034	0.0094 U	0.0034 JP	0.0048 P	0.0024 JP	0.0060 U	-	-	-	-
Endrin aldehyde	-	-	0.0079 JP	0.0094 U	0.0050 U	0.0046 U	0.0058 U	0.0060 U	-	-	-	-
Endrin ketone	-	-	0.0087 U	0.0049 J	0.0032 JP	0.0040 JP	0.0058 U	0.0025 JP	-	-	-	-
gamma-BHC (lindane)	0.52	2.1	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-
gamma-Chlordane	-	-	0.0049 P	0.0032 J	0.0014 J	0.0024 U	0.0069	0.0056 P	-	-	-	-
Heptachlor	0.11	0.38	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-
Heptachlor epoxide	0.053	0.19	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-
Methoxychlor	310	3100	0.018 J	0.017 JP	0.05	0.065	0.0089 JP	0.012 JP	-	-	-	-
Toxaphene	0.44	1.6	0.45 U	0.49 U	0.26 U	0.24 U	0.3 U	0.31 U	-	-	-	-
General Chemistry												
Cyanide (total)	22	140	0.27 B	0.17 U	0.19 B	0.21 B	0.23 B	0.32 B	-	-	-	-
Percent moisture (%)	-	-	-	-	-	-	-	-	13.5	15	15.0	13
Total organic carbon (TOC)	-	-	-	-	-	-	-	-	390	-	550	-
Notes:												

All concentrations are expressed in units of milligrams per kilogram (mg/kg) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

[2] - Sample IDs and locations SEDIMENT-1, SEDIMENT-2, SEDIMENT-3 are equivalent to SED-1, SED-2 and SED-3, respectively

ft BWS - Feet below water surface

GMR - Great Miami River

B - Value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

P - Indicates there is a greater than 25% difference for detected concentrations between two GC columns. The lower of the two values is reported.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

U - Compound was analyzed for but not detected.

-- Not applicable.

TABLE 2.4
HISTORIC SOIL VAPOR VOC ANALYTICAL RESULTS
OPERABLE UNIT 2
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Sample Location:	GP06-09				GP07-09				GP08-09				GP09-09				GP10-09			
	A-038443-091609-NH-019 9/16/2009				A-038443-091609-GL-020 9/16/2009				A-038443-091709-NH-021 9/17/2009				A-038443-091509-NH-009 9/15/2009				A-038443-091509-GL-010 9/15/2009			
Parameter	RESIDENTIAL SVSL		INDUSTRIAL SVSL		ELCR	HI	ELCR	HI	ELCR	HI	ELCR	HI	ELCR	HI	ELCR	HI	ELCR	HI		
	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>																
Volatiles																				
1,1,1-Trichloroethane	-	52000	-	220000		1.6 U		55 U		0.93 J		18		14						
1,1,2,2-Tetrachloroethane	0.42	-	2.1	-		2.1 U		70 U		2.1 U		2.1 U		2.1 U						
1,1,2-Trichloroethane	1.5	2.1	7.7	8.8		1.6 U		55 U		1.6 U		1.6 U		1.6 U						
1,1-Dichloroethane	15	-	77	-		1.2 U		41 U		1.2 U		1.2 U		1.2 U						
1,1-Dichloroethene	-	2100	-	8800		0.79 U		40 U		0.79 U		0.79 U		0.79 U						
1,2,4-Trichlorobenzene	-	21	-	88		5.9 U		190 U		5.9 U		5.9 U		5.9 U						
1,2-Dibromo-3-chloropropane (DBCP)	0.0016	2.1	0.02	8.8		9.7 UJ		490 UJ		9.7 UJ		9.7 UJ		9.7 UJ						
1,2-Dibromoethane (Ethylene dibromide)	0.041	94	0.20	390		3.1 U		78 U		3.1 U		3.1 U		3.1 U						
1,2-Dichlorobenzene	-	2100	-	8800		2.4 U		61 U		2.4 U		2.4 U		2.4 U						
1,2-Dichloroethane	0.94	73	4.7	310		0.81 U		62 U		0.81 U		0.81 U		0.81 U						
1,2-Dichloropropane	2.4	42	12	180		0.92 U		70 U		0.92 U		0.92 U		0.92 U						
1,3-Dichlorobenzene ^w	2.2	8300	11	35000		2.4 U		120 U		2.0 J		2.4 U		2.4 U						
1,4-Dichlorobenzene	2.2	8300	11	35000		2.4 U		120 U		2.4 U		2.4 U		2.4 U						
2-Butanone (Methyl ethyl ketone) (MEK)	-	52000	-	220000		2.9 U		150 U		1.9 J		1.5 J		3.2						
2-Hexanone	-	310	-	1300		2.0 U		210 U		2.0 U		2.0 U		2.0 U						
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	31000	-	130000		1.6 U		210 U		1.6 U		1.6 U		3.9 J						
Acetone	-	320000	-	1400000		7.1 U		120 U		17 UJ		11 U		21 U						
Benzene	3.1	310	16	1300		0.96 U		49 U		1.8		1.9		1.7						
Bromodichloromethane	0.66	-	3.3	-		2.0 U		68 U		2.0 U		2.0 U		2.0 U						
Bromoform	22	-	110	-		4.1 U		100 U		4.1 U		4.1 U		4.1 U						
Bromomethane (Methyl bromide)	-	52	-	220		1.6 U		79 U		1.6 U		1.6 U		1.6 U						
Carbon disulfide	-	7300	-	31000		6.5		160 U		8.4		13		11						
Carbon tetrachloride	4.1	1000	20	4400		1.9 U		64 U		1.9 U		1.9 U		1.9 U						
Chlorobenzene	-	520	-	2200		1.4 U		47 U		1.4 U		1.9		1.4 U						
Chloroethane	-	100000	-	440000		1.1 U		53 U		1.1 U		1.1 U		1.1 U						
Chloroform (Trichloromethane)	1.1	1000	5.3	4300		1.5 U		49 U		1.2 J ^a		14 ^{ac}		4.5 ^a						
Chloromethane (Methyl chloride)	-	940	-	3900		1.7 U		42 UJ		1.7 U		1.5 J		1.2 J						
cis-1,2-Dichloroethene ^x	-	630	-	2600		0.79 U		40 U		0.79 U		1.4		0.79 U						
cis-1,3-Dichloropropene ^y	6.1	210	31	880		1.8 U		46 U		1.8 U		1.8 U		1.8 U						
Cyclohexane	-	63000	-	260000		1.7 U		35 U		2.1		1.7 U		1.7 U						
Dibromochloromethane	0.9	-	4.5	-		3.4 U		86 U		3.4 U		3.4 U		3.4 U						
Dichlorodifluoromethane (CFC-12)	-	1000	-	4400		4.0		75 U		63		2.5		24						
Ethylbenzene	9.7	10000	49	44000		1.3 U		44 U		4.4		3.2		5.4						
Isopropyl benzene	-	4200	-	18000		2.5 U		50 U		2.5 U		2.5 U		2.5 U						
Methyl tert butyl ether (MTBE)	94	31000	470	130000		3.6 U		37 U		3.6 U		3.6 U		1.4 J						
Methylene chloride	960	6300	12000	26000		1.0 U		19 J		0.55 J		1.0 U		1.0 U						
Naphthalene	0.72	31	3.6	130		2.6 U		160 U		2.6 U		3.8 ^{ac}		7.9 ^{ac}						
Styrene	-	10000	-	44000		1.7 U		43 U		1.7 U		1.7 U		1.7 U						
Tetrachloroethene	94	420	470	1800		1.5 J		69 U		25		120 ^a		40						
Toluene	-	52000	-	220000		1.1 U		27 J		22		12		18						
trans-1,2-Dichloroethene	-	630	-	2600		0.79 U		40 U		0.79 U		0.79 U		0.79 U						
trans-1,3-Dichloropropene ^z	6.1	210	31	880		1.8 U														

TABLE 2.5

**HISTORIC SOIL VAPOR FIELD PARAMETERS
OPERABLE UNIT 2
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO**

<i>Sample Location:</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP10-09</i>	<i>GP10-09</i>	<i>GP10-09</i>	<i>GP10-09</i>			
<i>Sample ID:</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP06-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP07-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP08-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP09-09</i>	<i>GP10-09</i>	<i>GP10-09</i>	<i>GP10-09</i>	<i>GP10-09</i>			
<i>Sample Date:</i>	<i>9/18/2009</i>	<i>10/14/2009</i>	<i>12/9/2009</i>	<i>11/1/2012</i>	<i>1/10/2013</i>	<i>9/18/2009</i>	<i>10/14/2009</i>	<i>12/9/2009</i>	<i>11/1/2012</i>	<i>1/10/2013</i>	<i>9/18/2009</i>	<i>10/14/2009</i>	<i>12/9/2009</i>	<i>11/1/2012</i>	<i>1/10/2013</i>	<i>9/18/2009</i>	<i>10/14/2009</i>	<i>12/9/2009</i>	<i>11/1/2012</i>	<i>1/7/2013</i>	<i>9/18/2009</i>	<i>10/14/2009</i>	<i>12/9/2009</i>	<i>11/1/2012</i>

*Parameter**Field Parameters*

Methane	0.1	0	0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	0	0	0 / 0.1	0 / 0	0.1	0	0	0 / 0	0 / 0	0	0.1	0	0 / 0	0 / 0		
Carbon Dioxide (%)	8.2	6.1	2.5	2.4 / 2.1	1.5 / 1.5	13.6	12.8	5.1	6.2 / 6.7	13.7 / 13.8	10.5	9.1	3.9	0 / 0.4	1.5 / 2.1	9.2	8.1	4.4	4.2 / 4.5	4.9 / 4.4	4.4	3.5	2.4	4.0 / 4.3	4.1 / 4.5
Oxygen (%)	--	10.1	16	19.1 / 19.5	19.3 / 19.0	--	4.4	13.9	13.1 / 12.8	4.7 / 5.0	--	7.8	16	21.9 / 21.6	21.2 / 20.6	--	12.1	13.5	19.8 / 19.7	16.2 / 16.2	13.5	--	8.3	3.1 / 2.4	0.1 / 0.0
Lower Explosive Limit (%)	--	0	0	0 / 0	0 / 0	--	0	0	0 / 0	0 / 0	--	0	0	0 / 2	0 / 0	--	0	0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	0 / 0
Manometer Pressure (inches H ₂ O)	--	0	-1.1	0.8	0	--	0	0	2.81	2.41	--	0	0	0.8	-0.4	--	0	-0.4	0	0	-0.4	--	-2	5.22	4.42
PID (ppm)	--	0	0	--	--	0	0	--	--	--	0	0	--	--	--	0	0	--	--	0	--	0	--	--	
Barometric Pressure (in. Hg)	29.28	29.27	28.58	--	--	29.28	29.27	28.58	--	--	29.28	29.27	28.58	--	--	29.28	29	28.64	--	--	28.64	29.28	28.64	--	--
Balance (%)	--	83.8	81.5	78.5 / 78.4	79.2 / 79.5	--	82.9	81	80.7 / 80.5	81.6 / 81.2	--	83	80.1	78.1 / 77.9	77.3 / 77.3	--	79.8	82.1	76 / 75.8	78.9 / 79.4	82.1	--	89.3	92.9 / 93.3	95.8 / 95.5
Ambient Air Temperature (°F)	--	--	35	--	--	--	35	--	--	--	--	35	--	--	--	--	35	--	--	--	35	--	--	--	

Notes:

Bold values exceed 10% of the LEL for methane**Bold and shaded** values exceed the LEL for methane (5%)**Bold, shaded, and *italic*** values exceed the UEL for methane (15%)

UEL - Upper explosive limit

LEL - Lower explosive limit

19.1 / 19.5 - filtered / unfiltered field reading

-- Not applicable.

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS FILL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Soil on Southern Parcels	
		Phase 1A Comparison to Industrial Soil Criteria and Site-Specific Risk Values	Phase 2 Additional sampling (if necessary) to develop risk assessment exposure estimates
1 <i>State the Problem</i>	i) Problem description	<ul style="list-style-type: none"> - Soil and sediment samples from the Quarry Pond Parcels contained PAHs at concentrations less than, and arsenic concentrations greater than screening levels in soil (SSLs) that are protective of groundwater. - Insufficient soil quality data exist for the Southern Parcels (OU2) in order to determine the presence or absence of direct contact risks to receptors via soil exposure pathways. - This investigation shall determine the lateral and vertical extent of the fill material to support the overall site assessment; - Characterize the fill material (surface and subsurface) to identify direct contact risks, as for input to the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA); - Determine if potential soil contamination is a result of migration from the Site or off-Site sources 	If soil containing contaminants at concentrations greater than screening values and background reference conditions is found in Phases 1A and 1B for Southern Parcels, additional soil samples will be collected to delineate soil impacts or to remove data gaps. The quantity of data must be sufficient to support a risk assessment.
	ii) Planning team	See note at bottom	
	iii) Conceptual model	<ul style="list-style-type: none"> - Contaminants in soil may pose a risk to receptors via the direct contact pathway. Cover material at the Site is limited or non-existent, which could lead to erosional run-off of contaminants towards the Quarry Pond. - Infiltrating precipitation can cause contaminants in soil to migrate downwards, ultimately impacting groundwater. 	
	iv) General intended use for data	The soil and groundwater data collected from each soil borehole will be used to identify direct contact risks and groundwater contamination, respectively associated with soil and groundwater samples from the Southern Parcels. The data collected will be compared against health-based risk values and applicable USEPA Industrial Soil Regional Screening Levels (RSLS) to identify risks associated with soil samples from the Southern Parcels.	The collected data will be used to generate exposure estimates for an assessment of direct contact risks, groundwater contamination, and risks to ecological receptors. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
	v) Resources, constraints, deadlines	Sufficient resources will be committed to sample soil on the Southern Parcels under the OU2 RI/FS work plan. Sampling may be postponed due to flooding.	
2 <i>Goals of the Study:</i>	i) Primary study question	Do soil samples from the Southern Parcels contain contaminants at concentrations greater than industrial soil and/or site-specific risk-based values?	Does soil on the Southern Parcels contain contaminants originating from the Site that may pose unacceptable human health risks or unacceptable risks to ecological receptors?
	ii) Alternate outcomes or actions	<ul style="list-style-type: none"> - If sampling demonstrates that contaminant concentrations in soil are less than risk-based screening levels/criteria, no further sampling or remedial action is planned. '- If sampling demonstrates that contaminant concentrations in soils are greater than screening levels/criteria, and greater than background reference conditions (see Phase 1B to right), further evaluation and/or remedial measures may be warranted. 	<ul style="list-style-type: none"> - If sampling demonstrates that human health and ecological risks are acceptable, no further action is required. '- If sampling demonstrates unacceptable human health or ecological risks, further evaluation, risk management and/or remediation would be required.
	iii) Type of problem (decision or estimation) ¹	Decision (Action Level)	Estimation
	iv.a) Decision statement	Determine whether any contaminant concentrations are greater than USEPA Industrial soil RSLS criteria or site-specific risk values in Southern Parcel soils.	--
	iv.b) Estimation statement & assumptions	--	The parameter of interest is the mean (for estimating direct contact risks) of soil contaminant concentrations within an identified exposure area on the Southern Parcels.

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS FILL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Soil on Southern Parcels	
		Phase 1A <i>Comparison to Industrial Soil Criteria and Site-Specific Risk Values</i>	Phase 2 <i>Additional sampling (if necessary) to develop risk assessment exposure estimates</i>
3 <i>Identify Information Inputs:</i>	i) Information types needed	- Soil sample analysis is required to assess conditions in the Southern Parcels. - Soil samples will be collected on a random basis (random oriented grid) from each exposure area. - Soil samples will also be collected at data gap locations or areas of suspected soil contamination.	- This would be a supplemental data collection effort, with analyses performed on soil samples obtained to fill in any data gaps across the exposure area.
	ii) Information sources	- New and existing data from the investigation will form the basis of assessment. The results from all soil samples collected from the Southern Parcels will be considered during interpretation of the data obtained.	- New data from the investigation will form the basis of assessment. Any available previous data (e.g., from Phase 1), within the exposure area will also be used.
	iii) Basis of Action Level	Action Levels are: - USEPA Industrial Soil RSLs	--
	iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).	
4 <i>Define the Boundaries of the Study:</i>	i) Target population, sample units	The target population is surficial and subsurface soils on the Southern Parcels. The sampling units are individual samples collected from the soil, divided into background reference, and exposure units for assessment of risks to human receptors.	Target population is soil on the Southern Parcels comprising the exposure units for assessment of exposure risks for human receptors.
	ii) Specify spatial boundaries	The spatial boundaries are the limits of the Southern Parcels (OU2) Site boundaries. Surficial soil is to a maximum depth of 2 ft bgs. The spatial boundaries of the sub-surface soil samples will be to a depth of 15 ft bgs, i.e., the maximum soil depth construction workers would be expected to encounter. Additional unsaturated soil samples will be collected at depths greater than 15 ft bgs. Boreholes will be advanced up to 5 ft into native material, to the base of landfill waste, the water table, or until refusal.	The spatial boundaries are the limits of the Southern Parcels (OU2) Site boundaries. Surficial soil is to a maximum depth of 2 ft bgs. The spatial boundaries of the sub-surface soil samples will be to a maximum depth of 15 ft bgs, i.e., the maximum soil depth construction workers would be expected to encounter. The spatial boundaries to evaluate risks to groundwater will be the entire depth of soil above the water table.
	iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on the exposure assumptions of the Action Levels.	
	iv) Identify any other practical constraints	Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels.	Practical constraints anticipated for sampling of Southern Parcels soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. Off-Site sampling, if required for delineation purposes, may be restricted by permission of property owners.
	v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	--
	v.b) Scale of estimates	--	The scale of the exposure estimate is to be identified in a Site-specific risk assessment.
5 <i>Develop the Analytic Approach:</i>	i.a) Specify Action Level	1) USEPA Industrial Soil RSLs	--

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS FILL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Soil on Southern Parcels	
		Phase 1A Comparison to Industrial Soil Criteria and Site-Specific Risk Values	Phase 2 Additional sampling (if necessary) to develop risk assessment exposure estimates
i.b) Specify estimator		--	The arithmetic mean (per USEPA RAGS requirements) surface soil concentration of each contaminant that is greater than screening criteria.
ii.a) Specify population parameter of interest and theoretical decision rule	Individual observations at sampling locations on the Southern Parcels.	--	--
ii.b) Specify estimation procedure	--	The study will estimate the mean concentration of the exposure unit population represented by the soil samples obtained.	
6 <u>Specify Performance or Acceptance Criteria:</u>			
i.a) Set baseline (null) and alternative hypotheses	Baseline H ₀ : soil sample concentrations are less than Action Levels. Alternative H ₁ : soil samples contain contaminant concentrations greater than Action Levels.	--	--
i.b) Specify how uncertainty accounted for in estimate	--	Uncertainty will be accounted for using a confidence interval on the population mean (per USEPA RAGS guidance).	
ii.a) Determine impact of decision errors (false positives/negatives)	N/A: no statistical test is employed (direct comparison to Action Levels)	--	--
ii.b) Specify confidence level for estimate	--	The confidence level of the estimate will be 95 percent, unless specified otherwise (based on data distribution and/or the presence of non-detect results) in USEPA's ProUCL Technical Guide (2010).	
iii) Specify "gray region" for test	N/A: no statistical test is employed (direct comparison to Action Levels)	--	--
iv.a) Set tolerable limits on decision errors	N/A: no statistical test is employed (direct comparison to Action Levels)	--	--
iv.b) Specify performance or acceptance criteria	--	The lesser value of the 95 percent UCL on the population mean or the maximum individual measurement will be required.	

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS FILL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Soil on Southern Parcels	
		Phase 1A <i>Comparison to Industrial Soil Criteria and Site-Specific Risk Values</i>	Phase 2 <i>Additional sampling (if necessary) to develop risk assessment exposure estimates</i>
7 <i>Develop the Plan for Obtaining Data:</i>	i) Select sampling design	<p>Soil samples from Southern Parcels will be collected from four exposure areas (Jim City Parcels, Ron Barnett Parcels, Quarry Pond Parcel soil, Quarry Pond embankments including Parcel 3275). Exposure areas are determined based on current use and ownership, potential future use, and topography.</p> <p>Separate sets of data will be collected for (i) surface soil 0-2', (ii) subsurface soil 2-15', and (iii) unsaturated samples from a minimum of 12 locations at depths greater than 15 ft bgs. Additional soil samples will be collected at intervals within boreholes exhibiting evidence of contamination (based on field screening, visual and olfactory observations)</p> <p>A minimum of 8 samples per exposure area, per USEPA's ProUCL Technical Guide (2010), spaced on a regular grid with random origin (i.e., a systematic random sampling design), will be obtained for each exposure area identified in the risk assessment. Additional samples will be collected in the areas of any data gaps. A minimum of 10 samples will be collected from sub-surface soil (2-15'). Additional samples will be collected from subsurface soil (>15' at 3 locations per exposure area and additional locations) if impacts are identified.</p>	The number of additional soil samples required, for delineation purposes and removal of data gaps, will be determined based on the results of the Phase 1A and 1B investigations.
	ii) Specify/evaluate key assumptions supporting the design	<p>The calculation of 95 percent upper confidence limits on a population mean makes assumptions of data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.</p>	The calculation of 95 percent upper confidence limits on a population mean makes assumptions of data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.

Notes:

- (i) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").
- If investigating an "estimation problem", follow ".b" items.
- Once the baseline risk assessment for OU2 has been performed, possible remedial goals (PRGs) will be derived from the calculator using site-specific risks.
- Item not applicable for the type of problem (decision vs. estimation) investigated.

The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman, Rawa Fleisher, Angela Bown (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineers); Mark Hilverda (CRA project hydrogeologist); Leslie Patterson (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – GROUNDWATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	<i>Groundwater on Southern Parcels</i>	
		Phase 1 <i>Investigation of Base of Soil/Fill on Southern Parcels</i>	Phase 2 <i>Groundwater Investigation (if necessary)</i>
1 <i>State the Problem</i>	i) Problem description	<ul style="list-style-type: none"> - Fill areas may contain materials that can produce impacts to underlying groundwater due to leaching and infiltration into groundwater - Insufficient soil quality data exist for the Southern Parcels (OU2) in order to determine the presence or absence of direct contact risks to receptors via soil exposure pathways. - Collection and analyses of soil samples from Southern Parcels is required to make this assessment. - Collection and analyses of off-Site background soil samples is required to determine if potential soil contamination is a result of migration from the Site or off-Site sources. - Soil and sediment samples from the Quarry Pond Parcels contained PAHs at concentrations less than, and arsenic concentrations greater than screening levels in soil (SSLs) that are protective of groundwater. 	<ul style="list-style-type: none"> - If soil samples collected from the base of the borehole and groundwater samples collected from temporary monitoring wells contain contaminant concentrations greater than USEPA MCL RSL criteria, a groundwater investigation will be conducted to delineate areas of groundwater contamination within the Southern Parcel boundary.
	ii) Planning team iii) Conceptual model	See note at bottom	
	iv) General intended use for data	<ul style="list-style-type: none"> - Contaminants that migrate to soils overlaying the water table may pose a risk for mobilization and transport of contaminants. The presumed groundwater flow direction is westward towards the Great Miami River and thus, contaminants reaching the water table may be mobilized to this freshwater body and carried further downstream. Mobilization to a surface water body results in a direct contact risk. 	<p>The collected data and any previously generated data (historic monitoring wells and vertical aquifer samples (VAS)) will be used to generate exposure estimates for an assessment of direct contact risks, groundwater contamination, and risks to ecological receptors. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.</p>
	v) Resources, constraints, deadlines	<p>Sufficient resources will be committed to sample soil and water on the Southern Parcels under the OU2 RI/FS work plan. Sampling may be postponed due to flooding.</p>	
2 <i>Goals of the Study:</i>	i) Primary study question	<ul style="list-style-type: none"> - Do soil samples from the base of the soil borings in the Southern Parcels contain contaminants at concentrations greater than USEPA screening levels in soil (SSLs) that are protective of groundwater, and pose a threat to underlying groundwater? 	<ul style="list-style-type: none"> - Do groundwater samples from monitoring wells installed around the perimeter of the Southern Parcels contain contaminants at concentrations greater than USEPA maximum contaminant level (MCL) Regional Screening Levels (RSLs)?
	ii) Alternate outcomes or actions	<ul style="list-style-type: none"> - If sampling demonstrates that contaminant concentrations in soil are less than risk-based screening levels/criteria, no further sampling or remedial action is planned. - If soil samples collected from the base of the borehole demonstrate that contaminant concentrations in soils are greater than screening levels/criteria, and greater than background reference conditions, groundwater investigative activities may be warranted. 	<ul style="list-style-type: none"> - If sampling demonstrates that human health and ecological risks are acceptable, no further action is required. - If sampling demonstrates unacceptable human health or ecological risks, further evaluation, risk management and/or remediation would be required.
	iii) Type of problem (decision or estimation) ¹ iv.a) Decision statement	Decision (Action Level)	Decision (Action Level)
	iv.b) Estimation statement & assumptions	Determine whether any contaminant concentrations in the base of the soil boring are greater than USEPA screening levels in soil (SSLs) that are protective of groundwater and/or site-specific risk values in Southern Parcel soils.	The data will be compared against health-based risk values and applicable USEPA MCL RSL criteria. The data collected from permanent groundwater monitoring wells will ultimately be used in the Baseline Risk Assessment for OU1, and potentially OU2.
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TABLE 3.2

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – GROUNDWATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO**

DQO Step	Medium: Investigation Phase: Investigation Item:	Groundwater on Southern Parcels	
		Phase 1 <i>Investigation of Base of Soil/Fill on Southern Parcels</i>	Phase 2 <i>Groundwater Investigation (if necessary)</i>
3 <i>Identify Information Inputs:</i>	i) Information types needed	<ul style="list-style-type: none"> - Soil sample analysis is required to assess conditions in the Southern Parcels. - Soil samples will be collected on a random basis (random oriented grid) from each exposure area. - Soil samples will also be collected at data gap locations or areas of suspected soil contamination. 	<ul style="list-style-type: none"> - Groundwater data from monitoring wells installed along the perimeter of the Southern Parcels.
	ii) Information sources	<ul style="list-style-type: none"> - New and existing data from the investigation will form the basis of assessment. The results from soil samples collected from the base of the soil borings from the Southern Parcels will be considered during interpretation of the data obtained. 	<ul style="list-style-type: none"> - New data from the investigation will form the basis of assessment. Any available previous data (e.g., from historic monitoring wells and VAS samples), within the exposure area will also be used.
	iii) Basis of Action Level	<p>Action Levels are:</p> <ul style="list-style-type: none"> - USEPA screening levels in soil (SSLs) that are protective of groundwater 	<p>Action levels are:</p> <ul style="list-style-type: none"> - USEPA maximum contaminant level (MCL) Regional Screening Levels (RSLs) or Tap Water levels where MCLs are unavailable
	iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).	
4 <i>Define the Boundaries of the Study:</i>	i) Target population, sample units	<ul style="list-style-type: none"> - The target population are base soils on the Southern Parcels. The sampling units are individual samples collected from the soil, divided into background reference, and exposure units for assessment of mobilization risk to groundwater. 	<ul style="list-style-type: none"> - Target population is groundwater within the Southern Parcel. Sampling units are individual groundwater samples collected from monitoring wells.
	ii) Specify spatial boundaries	<ul style="list-style-type: none"> - The spatial boundaries are the limits of the Southern Parcels (OU2) Site boundaries. Surficial soil is to a maximum depth of 2 ft bgs. The spatial boundaries of the sub-surface soil samples will be to a depth of 15 ft bgs, i.e., the maximum soil depth construction workers would be expected to encounter. Additional unsaturated soil samples will be collected at depths greater than 15 ft bgs. Boreholes will be advanced up to 5 ft into native material, to the base of landfill waste, the water table, or until refusal. 	<ul style="list-style-type: none"> - The spatial boundaries are areas within the Southern Parcel boundary identified in the soil/fill investigation to be areas of potential contamination due to Site-related plumes.
	iii) Specify temporal boundaries	<ul style="list-style-type: none"> - The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on the exposure assumptions of the Action Levels. 	<ul style="list-style-type: none"> - Permanent monitoring wells can be installed at any time based on the results of the soil/fill investigation. - Two sampling events will be carried out at newly installed monitoring wells, during periods of high (i.e. February - April) or low (i.e., June - September) groundwater elevations. Seasonal groundwater flow fluctuations will be evaluated based on historic Site data, and will be demonstrated by the completion of a Site-wide groundwater elevation monitoring round completed prior to each sampling event.
	iv) Identify any other practical constraints	<ul style="list-style-type: none"> - Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels. 	
	v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	
	v.b) Scale of estimates	--	--
5 <i>Develop the Analytic Approach:</i>	i.a) Specify Action Level	USEPA screening levels in soil (SSLs) that are protective of groundwater	USEPA maximum contaminant level (MCL) Regional Screening Levels (RSLs) or Tap Water levels where MCLs are unavailable
	i.b) Specify estimator	--	--
	ii.a) Specify population parameter of interest and theoretical decision rule	Individual observations at sampling locations on the Southern Parcels.	
	ii.b) Specify estimation procedure	--	--

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – GROUNDWATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Groundwater on Southern Parcels	
		Phase 1 <i>Investigation of Base of Soil/Fill on Southern Parcels</i>	Phase 2 <i>Groundwater Investigation (if necessary)</i>
6 <i>Specify Performance or Acceptance Criteria:</i>	i.a) Set baseline (null) and alternative hypotheses	Baseline H ₀ : soil sample concentrations are less than Action Levels Alternative H ₁ : soil samples contain contaminant concentrations greater than Action Levels	Baseline H ₀ : groundwater sample concentrations are less than Action Levels or are consistent with upgradient conditions (i.e., source is upgradient, either on or off-Site) Alternative H ₁ : groundwater sample concentrations are greater than Action Levels or upgradient conditions (i.e., contamination is Site-related).
	i.b) Specify how uncertainty accounted for in estimate	--	--
	ii.a) Determine impact of decision errors (false positives/negatives)	N/A: no statistical test is employed (direct comparison to Action Levels)	N/A: no statistical test is employed (direct comparison to Action Levels)
	ii.b) Specify confidence level for estimate	--	--
	iii) Specify "gray region" for test	N/A: no statistical test is employed (direct comparison to Action Levels)	
	iv.a) Set tolerable limits on decision errors	N/A: no statistical test is employed (direct comparison to Action Levels)	
	iv.b) Specify performance or acceptance criteria	--	--
7 <i>Develop the Plan for Obtaining Data:</i>	i) Select sampling design	- Soil samples from Southern Parcels will be collected from four exposure areas (Jim City Parcels, Ron Barnett Parcels, Quarry Pond Parcel soil, Quarry Pond embankments including Parcel 3275). - Exposure areas are determined based on current use and ownership, potential future use, and topography.	- Groundwater samples from Southern Parcels will be collected from four exposure areas (Jim City Parcels, Ron Barnett Parcels, Quarry Pond Parcel soil, Quarry Pond embankments including Parcel 3275). - Exposure areas are determined based on current use and ownership, potential future use, and topography.
			- Monitoring wells will be installed at select locations identified as areas of potentially unacceptable risks or areas of significantly elevated contaminant concentrations. Respondents will discuss Phase 1 data, and all previous data with USEPA to determine the next steps and suitable locations of permanent monitoring wells. - Two sampling events will be carried out at newly installed monitoring wells. Parameters included in the second round of analysis may be decreased depending on the results of the first round.
		A minimum of 8 samples per exposure area, per USEPA's ProUCL Technical Guide (2010), spaced on a regular grid with random origin (i.e., a systematic random sampling design), will be obtained for each exposure area identified in the risk assessment. Additional samples will be collected in the areas of any data gaps. A minimum of 10 samples will be collected from sub-surface soil (2-15'). Additional samples will be collected from subsurface soil (>15' at 3 locations per exposure area and additional locations) if impacts are identified.	- A stratified-random design would be used to ensure that a suitable network of on-Site and upgradient monitoring wells is established to determine potential on-Site source areas. This design would include a more-intense well network (i.e., smaller strata) near known on-Site activities, and larger strata in other areas. A sufficient number of upgradient monitoring locations (3 to 4) would be employed to represent spatial variability in groundwater flowing towards the Site.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – GROUNDWATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	<i>Groundwater on Southern Parcels</i>	
		Phase 1 <i>Investigation of Base of Soil/Fill on Southern Parcels</i>	Phase 2 <i>Groundwater Investigation (if necessary)</i>
ii) Specify/evaluate key assumptions supporting the design		The calculation of 95 percent upper confidence limits on a population mean makes assumptions of data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.	

Notes:

- (1) Vapor Intrusion Investigation Work Plan, submitted to USEPA on December 17, 2010.
- (2) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").
If investigating an "estimation problem", follow ".b" items.
- Item not applicable for the type of problem (decision vs. estimation) investigated.
The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman and Rawa Fleisher (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineer); Mark Hilverda (CRA project hydrogeologist); Karen Cibulskis (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORaine, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Soil Gas on Southern Parcels	
		Phase 1 Investigation of Soil/Fill on Southern Parcels	Phase 2 Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)
1 <i>State the Problem</i>	i) Problem description	<ul style="list-style-type: none"> - Fill areas may contain materials that can produce elevated concentrations of explosive gases and NMOCs in landfill gas, and VOCs in soil gas. - Businesses operating on Site are located above or immediately adjacent to fill material, in close proximity to the soil gas probe locations where elevated levels of VOCs and explosive gases were detected. - A datagap exists with respect to the characterization of the fill material within the Southern Parcel area. 	<ul style="list-style-type: none"> - If soil borehole samples containing contaminant concentrations greater than ODH Industrial Action Levels are identified within the Southern Parcel boundary, actual on-Site soil gas concentrations will be investigated through the installation of soil gas probes in the fill area to assess the present conditions and potential for migration.
	ii) Planning team iii) Conceptual model	See note at bottom	
	iv) General intended use for data	<p>The collected soil gas data will be used for direct comparison to Ohio Department of Health (ODH) Industrial Action Levels. As such, each result will represent a reasonable worst-case maximum potential concentration migrating to indoor air at each structure. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.</p>	
	v) Resources, constraints, deadlines	<p>Sufficient resources have been reserved to collect and analyze soil gas from the probes. An iterative sampling approach may be required to refine estimates based on earlier findings from the OU1 vapor intrusion investigation.</p>	<p>Sampling may be constrained by access agreements to off-Site parcels or buildings. An iterative sampling approach may be required to refine estimates based on findings from the soil/fill investigation.</p>
2 <i>Goals of the Study</i>	i) Primary study question	<ul style="list-style-type: none"> - Do contaminant concentrations in soil vapor pose an unacceptable risk, via the vapor intrusion pathway, to occupants of structures on, or immediately adjacent to the Site? - Are concentrations of combustible gases within a structure greater than the screening criterion of 1 and 10 percent of the LEL (as per the USEPA Region V Vapor Intrusion Guidebook, October 2010), or the regulatory criterion of 25 percent of the LEL (as per OAC Chapter 3745-27-12)? - Taken together, how do the concentrations of contaminants and combustible gases in soil vapor affect future use of the Site? - Does the OU2 soil vapor act as a source of soil gas to the structures studied in the Vapor Intrusion investigation? 	
	ii) Alternate outcomes or actions	<ul style="list-style-type: none"> - If soil gas or soil borehole samples collected from the probes or boreholes, respectively, contain VOCs at concentrations less than the regulatory criteria, and methane below 1 and 10 percent of the LEL, no further action is necessary. - If VOCs and/or methane are present at concentrations greater than the criteria, then further evaluation is required. 	
	iii) Type of problem (decision or estimation) ⁽²⁾ iv.a) Decision statement	<p>Decision (Action Level)</p> <p>Determine whether VOCs are present in soil samples within the fill material and along the southern and western perimeters of the Quarry Pond Parcels at levels posing potential risk to occupants of on-Site structures specified in the Vapor Intrusion Investigation Work Plan (CRA, December 17, 2010).⁽¹⁾</p>	<p>Decision (Action Level)</p> <p>Determine whether VOCs are present in the fill material and along the southern and western perimeters of the Quarry Pond Parcels at levels posing potential risk to occupants of off-Site structures identified as being at risk from volatilization of groundwater into indoor air based on Phase 2 of the Groundwater DQO investigation and Southern Parcels soil investigation.</p>
	iv.b) Estimation statement & assumptions	--	
3 <i>Identify Information Inputs:</i>	i) Information types needed	<ul style="list-style-type: none"> - Analytical data and explosive gas monitoring from soil boreholes and gas probes installed within the fill material. 	
	ii) Information sources	<ul style="list-style-type: none"> - New data from the Southern Parcels soil investigation will form the basis of assessment. 	<ul style="list-style-type: none"> - New data from the Southern Parcels soil investigation will form the basis of assessment.

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORaine, OHIO

DQO Step:	Medium: Investigation Phase: Investigation Item:	Soil Gas on Southern Parcels	
		Phase 1 Investigation of Soil/Till on Southern Parcels	Phase 2 Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)
iii) Basis of Action Level	Action Levels are: - Ohio Department of Health (ODH) Industrial Action Levels		
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008). During the soil borehole investigation, Methane values will be recorded in the field using an RKI Eagle 2 equipped with a methane elimination mode to differentiate methane from VOCs.	Methods are described in the Vapor Intrusion Investigation Work Plan (CRA, December 17, 2010) and Field Sampling Plan (CRA, January 2011). VOC and naphthalene analysis is via EPA method TO-15. During soil gas probe installation, methane values will be recorded in the field using an FID or combustible gas meter. To confirm the field readings, a percentage of the Summa Canisters will be analyzed for methane via ASTM D1946.	
4 Define the Boundaries of the Study:			
i) Target population, sample units	The target population is surficial and subsurface soils on the Southern Parcels. The sampling units are individual samples collected from the soil, divided into background reference, and exposure units for assessment of risks to human receptors.	Target population is soil gas within the fill area where concentrations of VOCs in soil are greater than ODH Industrial Action Levels, and therefore, represent a vapor intrusion risk.	
ii) Specify spatial boundaries	Spatial boundaries are the limits of the Southern Parcels within the OU2 boundary, which included the fill area and occupied buildings.	Spatial boundaries are the limits of the Southern Parcels within the OU2 boundary, which included the fill area and occupied buildings, where concentrations of contaminants are greater than ODH Industrial Action Levels.	
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions used in the derivation of the Action Levels.		
iv) Identify any other practical constraints	- Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels.	- Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels. - Depending on soil borehole sample analytical results, the soil gas probe may not be able to be screened in intervals that delineate the specific stratigraphic layer(s) contributing to combustible gas concentrations.	
v.a) Scale of inference for decision making	The decision unit is the fill area within the Southern Parcels.		
v.b) Scale of estimates	--		
5 Develop the Analytic Approach:			
i.a) Specify Action Level	1) ODH Industrial Action Levels 2) 1 and 10 percent of the LEL 3) 25 percent of the LEL	--	
i.b) Specify estimator		Maximum concentration in soil gas samples and explosive gas measurements at each structure compared directly to criteria.	
ii.a) Specify population parameter of interest and theoretical decision rule		--	
ii.b) Specify estimation procedure		--	
6 Specify Performance or Acceptance Criteria:			
i.a) Set baseline (null) and alternative hypotheses	Baseline H ₀ : soil vapor contamination concentrations are less than Action Levels Alternative H ₁ : soil vapor contamination concentrations are greater than Action Levels		
i.b) Specify how uncertainty accounted for in estimate		--	
ii.a) Determine impact of decision errors (false positives/negatives)	N/A: since comparing to maximum value, no statistical test is employed		
ii.b) Specify confidence level for estimate		--	
iii) Specify "gray region" for test	N/A: since comparing to maximum value, no statistical test is employed		
iv.a) Set tolerable limits on decision errors	N/A: since comparing to maximum value, no statistical test is employed		
iv.b) Specify performance or acceptance criteria		--	

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORaine, OHIO

DQO Step	Medium:	Soil Gas on Southern Parcels	
		Phase 1 <i>Investigation of Soil/Fill on Southern Parcels</i>	Phase 2 <i>Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)</i>
7 <i>Develop the Plan for Obtaining Data:</i>	i) Select sampling design	<p>- Soil samples from Southern Parcels will be collected from four exposure areas (Jim City Parcels, Ron Barnett Parcels, Quarry Pond Parcel soil, Quarry Pond embankments including Parcel 3275).</p> <p>' Soil borehole sample analytical results will be compared to ODH Action Levels</p>	<p>- CRA will install temporary soil gas probes at select locations dependent on the observations CRA makes during the drilling of the soil borings</p> <p>- CRA will assess the need for further soil gas monitoring within or beyond the fill material limits, based on the results of the initial monitoring.</p>
	ii) Specify/evaluate key assumptions supporting the design	--	--

Notes:

- (1) Vapor Intrusion Investigation Work Plan, submitted to USEPA on December 17, 2010.
- (2) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").

If investigating an "estimation problem", follow ".b" items.

NMOC Non-methane organic compounds

- Item not applicable for the type of problem (decision vs. estimation) investigated.
- The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman and Rawa Fleisher (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineer); Mark Hilverda (CRA project hydrogeologist); Karen Cibulskis (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SURFACE WATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO**

TABLE 3.4

DQO	Medium: Investigation Phase: Step:	Surface Water		
		Phase 1A Comparison to Ambient Water Quality Criteria	Phase 1B Comparison to Upstream Conditions	Phase 1C Quarry Pond Surface Water Sampling
1 State the Problem				
i) Problem description		Surface water samples have not previously been obtained from the Great Miami River (GMR) as it flows past by the Site. It is unknown whether the Site has any measurable impact on water quality in the GMR.		Limited historic surface water samples have been obtained from the Quarry Pond. Historic Quarry Pond surface water samples did not contain any VOCs. No other parameters were assessed. The impact of Site contaminants on the Quarry Pond is not known.
ii) Planning team iii) Conceptual model		See note at bottom	- Shallow groundwater from the Site typically flows towards the west and/or north towards the GMR, which could carry contaminants into its surface waters. - Erosion of surface soils from the Site could also carry Site-related contaminants to the GMR, which is at a lower elevation, via overland surface flow. - During flood events, any potential GMR contaminants originating off-Site could affect the Site. - Surface water is well mixed and any contaminants would be evenly distributed throughout the water column.	- Shallow and deep groundwater from the Site typically flows towards the west towards the Quarry Pond, which could carry contaminants into the Quarry Pond. - During flood events, off-Site contaminants would be deposited on-Site. - Erosion of surface soils from the Site could also carry Site-related contaminants to the Quarry Pond, which is at a lower elevation, via overland surface flow.
iv) General intended use for data		The data collected will be compared against ambient water quality criteria to assess if aquatic ecosystem health is potentially impaired. In addition, CRA will visually inspect the bank of the GMR adjacent to the Site for evidence of discharges potentially related to the Site (i.e., erosion rills, iron oxidation, turbidity, etc.). Sample locations will be matched up with Site discharges, if observed. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The data collected from sampling locations along the Site's boundaries will be compared to upstream (background) conditions, to determine if there are any measurable inputs of contaminants from the Site. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The data collected will be compared against ambient water quality criteria to assess if aquatic ecosystem health is potentially impaired. In addition, CRA will visually inspect the Quarry Pond embankments for evidence of discharges (i.e., erosion rills, iron oxidation, turbidity, etc.). Sample locations will be matched up with Site discharges, if observed. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
v) Resources, constraints, deadlines		Surface water quality may be influenced by rainfall events, water temperature and other seasonal effects, which requires monitoring at different times of the year and under different conditions. Surface water sampling may not be possible during high flows or during ice-cover conditions. Surface water sampling will be completed during low flow periods where contaminants entering via groundwater would present the greatest risks.		
2 Goals of the Study:				
i) Primary study question		Does surface water quality fail to meet ambient water quality criteria for protection of human health (direct contact and ingestion) and aquatic organisms?	Does the Site add contaminants to surface water in the GMR as it flows past the Site?	Does surface water quality fail to meet ambient water quality criteria for protection of aquatic organisms and human health (trespassers)?
ii) Alternate outcomes or actions		- If sampling demonstrates that ambient water quality criteria are met, no further monitoring is planned. - If sampling demonstrates that criteria are not met, and that contaminant concentrations are greater than upstream conditions (see Phase 1B to right), further evaluation and/or control measures may be warranted.	- If sampling demonstrates conditions adjacent to the Site are less than those found upstream, no further monitoring is planned. - If sampling demonstrates conditions are greater than upstream, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or control measures may be warranted.	- If sampling demonstrates that ambient water quality criteria are met, no further monitoring is planned. - If sampling demonstrates that criteria are not met, further evaluation and/or control measures may be warranted.
iii) Type of problem (decision or estimation) ¹	Decision (Action Level)			
iv.a) Decision statement		Determine whether any contaminants are present at concentration greater than ambient water quality criteria in the GMR as it flows past the Site.	Determine whether any measurable input of contaminants from the Site, relative to upstream conditions, occurs in the GMR as it flows past the Site.	Determine whether any contaminants are greater than ambient water quality criteria in the Quarry Pond.
iv.b) Estimation statement & assumptions			--	
3 Identify Information Inputs:				
i) Information types needed		Surface water sample analysis is required to assess conditions in the GMR as it flows past the Site.	Surface water samples are required to assess conditions in the Quarry Pond.	
ii) Information sources		New data from the investigation will form the basis of assessment.	New data from the investigation will form the basis of assessment.	
iii) Basis of Action Level		Action Levels are: - Ambient water quality criteria (Ohio drainage basin) - USEPA RSL target risk > 10 ⁻⁶ for human health - Hazard Index > 1 (non-carcinogens)	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on upstream conditions.	Action Levels are: - Ambient water quality criteria (Ohio drainage basin) - USEPA RSL target risk > 10 ⁻⁶ - Hazard Index > 1 (non-carcinogens)
iv) Appropriate sampling & analysis methods		Methods are described in the Field Sampling Plan (CRA, January 2011), CRA's Standard Operating Procedures, and the Quality Assurance Project Plan (CRA, September 2008). VOC samples will be collected using a peristaltic pump to minimize sample aeration while allowing for sample preservation. All other parameters will be sampled by directly dipping sample containers in the surface water body (GMR or Quarry Pond).		
4 Define the Boundaries of the Study:				
i) Target population, sample units		The target population is all water flowing in the GMR as it flows past the Site. The sampling units are individual grab samples collected from the GMR, divided into upstream and near-Site reaches.	The target population is all water in the Quarry Pond. The sampling units are individual grab samples collected from the Quarry Pond.	
ii) Specify spatial boundaries		Upstream sampling locations are those occurring to the east of Dryden Road, on the near-Site side of any dams. Near-Site sampling locations are those occurring to the west of Dryden Road (i.e., as surface water flows past the Site), and these will be located on the near (south/east) shore of the GMR.	Spatial boundaries are the boundaries of Quarry Pond surface water.	
iii) Specify temporal boundaries		The temporal boundaries are defined by the duration of monitoring, which will occur over two sampling rounds	The temporal boundaries are defined by the duration of monitoring, which will occur over two sampling rounds.	
iv) Identify any other practical constraints		Sampling may be postponed due to flooding or iced conditions in the GMR. The outfall of the City of Dayton Waste Water Treatment Plant across the river GMR, just south of the downstream limit of the Site, may substantially impact downstream water quality, making any subsequent Site effects difficult to discern. If any dams/weirs are encountered, samples will be collected from the side of the dam closest to the Site (i.e., downstream of any upstream dams, and upstream of any downstream dams). Dilution of contaminants is likely towards the center and far bank of the GMR, and increases with distance downstream of the Site.	Sampling may be postponed due to flooding or iced conditions in the Quarry Pond.	

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SURFACE WATER INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORaine, OHIO

DQO	Medium: Investigation Phase: Investigation Item:	Surface Water		
		Phase 1A Comparison to Ambient Water Quality Criteria	Phase 1B Comparison to Upstream Conditions	Phase 1C Quarry Pond Surface Water Sampling
Step:				
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis. For the RA, the 95% UCL of the mean concentration in an exposure unit will be used.	Comparisons to upstream conditions will be carried out on an individual-location basis.	Comparisons to Action Levels will be carried out on an individual-location basis.	
v.b) Scale of estimates		--		
5 Develop the Analytic Approach:				
i.a) Specify Action Level	Ambient Water Quality Criteria	Background Threshold Values based on upstream data, following USEPA's ProUCL Technical Guide (2010)	Ambient Water Quality Criteria	
i.b) Specify estimator		--		
ii.a) Specify population parameter of interest and theoretical decision rule	Individual observations at near-Site sampling locations.			
ii.b) Specify estimation procedure		--		
6 Specify Performance or Acceptance Criteria:				
i.a) Set baseline (null) and alternative hypotheses	Baseline H_0 : surface water concentrations are less than Action Levels Alternative H_1 : surface water concentrations are greater than Action Levels	Baseline H_0 : near-Site surface water is no different than upstream Alternative H_1 : near-Site surface water contains contaminant concentrations greater than upstream conditions	Baseline H_0 : surface water concentrations are less than Action Levels Alternative H_1 : surface water contaminant concentrations are greater than Action Levels	
i.b) Specify how uncertainty accounted for in estimate		--		
ii.a) Determine impact of decision errors (false positives/negatives)	N/A: no statistical test is employed (direct comparison to Action Levels)	- If a false positive (Type I) error occurs, unnecessary additional investigation may occur. - If a false negative (Type II) error occurs, conditions that are not due to background conditions and that pose potential risk to aquatic ecosystem and/or human receptors could persist.	N/A: no statistical test is employed (direct comparison to Action Levels)	
ii.b) Specify confidence level for estimate		--		
ii.i) Specify "gray region" for test	N/A: no statistical test is employed (direct comparison to Action Levels)	N/A: since comparing to maximum value, no statistical test is employed	N/A: no statistical test is employed (direct comparison to Action Levels)	
iv.a) Set tolerable limits on decision errors	N/A: no statistical test is employed (direct comparison to Action Levels)	The Background Threshold Values will be calculated using a 95 percent confidence level, making the false positive rate no greater than 5 percent. Since individual near-Site samples will be compared against background samples, the false negative rate will be controlled by two sampling events completed over the study period. An assessment of the decision performance curve achieved based on the monitoring data will be undertaken.	N/A: no statistical test is employed (direct comparison to Action Levels)	
iv.b) Specify performance or acceptance criteria		--		
7 Develop the Plan for Obtaining Data:				
i) Select sampling design	Near-Site samples will be collected close to the proximate (south/east) shore of the GMR, at the mid-point of the GMR at the upstream edge of the Site, and on the near-Site side of any dams; and at intervals of 800 ft (12 samples per event). Ten samples will be collected at regular intervals of 400 ft in each of two sampling events (22 samples total). Prior to surface water sample collection, a Site boundary visual inspection will be completed to identify any areas of discharge (i.e., rust stains, eddies, sediment, etc.). Surface water sampling will be collected during periods of GMR low-flow and the two sampling rounds will be completed at least three months apart.	Upstream samples will be collected at different locations, on the near-Site side of any dams, to provide a suitable data set (8-10 samples, per USEPA's ProUCL Technical Guide, 2010) for the calculation of Background Threshold Values. Near-Site samples will be collected along two three-point transects, upstream of the Site. Surface water sampling will be collected during periods of GMR low-flow and the two sampling rounds will be completed at least three months apart.	Prior to surface water sample collection, visual inspection of the Quarry Pond embankment will be completed to identify any areas of discharge (i.e., rust stains, eddies, sediment, etc.). Five samples will be collected at various points within the Quarry Pond in each of two sampling events (10 samples total). Two sampling rounds will be completed at least three months apart.	
ii) Specify/evaluate key assumptions supporting the design	Mixing in the GMR is expected to be reasonably complete over the travel length of the GMR (greater than one mile) adjacent to the Site. Sampling at key locations (upstream edge, mid-Site, upstream of the WWTP, and downstream) will represent the range of ambient conditions in surface water.	The calculation of Background Threshold Values (statistical limits on an upper percentile, e.g. 95th) for the upstream population of surface waters depends on data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.		

Notes:

- (¹) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").
If investigating an "estimation problem", follow ".b" items.
- Item not applicable for the type of problem (decision vs. estimation) investigated.
The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman, Rawa Fleisher, Angela Bown (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineers); Mark Hilverda (CRA project hydrogeologist); Leslie Patterson (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SEDIMENT INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINA, OHIO

DQO Step:	Medium: Investigation Phase:	GMR Sediment			Quarry Pond Sediments
		Phase 1A	Phase 1B	Phase 2	Phase 1C
Investigation Item:	Comparison to Ecological Screening Values	Comparison to Upstream Conditions	Benthic Sampling	Comparison to Ecological Screening Value	
1 State the Problem					
i) Problem description					
ii) Planning team					
iii) Conceptual model					
iv) General intended use for data					
v) Resources, constraints, deadlines					
2 Goals of the Study:					
i) Primary study question	Does near-Site sediment contain contaminants at concentrations greater than ESVs and/or Residential soil criteria for protection of human health?	Does the Site add significantly to contaminants in sediments in the GMR adjacent to and down-gradient of the Site?	Are benthic organisms at risk due to sediment concentrations caused by Site-related contamination?	Do sediments in the Quarry Pond contain contaminant concentrations greater than ESVs and/or Industrial soil criteria for protection of human health?	
ii) Alternate outcomes or actions	- If sampling demonstrates that contaminants in sediment are less than screening levels/criteria, no further sampling is planned. - If sampling demonstrates that contaminants are present at concentrations greater than screening levels/criteria, and that contaminant concentrations are greater than upstream conditions (see Phase 1B to right), further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates conditions adjacent to the Site are less than those found upstream, no further sampling is planned. - If sampling demonstrates contaminant concentrations are greater than those upstream, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or remediation may be warranted. Further evaluation may consist of an ecological study (i.e., benthic community study).	- If the community survey demonstrates that aquatic life in the GMR is not affected by Site-related contaminants, no further sampling is planned. - If the community survey demonstrates that Site-related contaminants impair aquatic life in the GMR, further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates that contaminants in sediment are less than screening levels/criteria, no further sampling is planned. - If sampling demonstrates that contaminants are present at concentrations greater than screening levels/criteria, further evaluation and/or remedial measures may be warranted (i.e., acute bioassays on representative Quarry Pond sediments).	
iii) Type of problem (decision or estimation) ¹	Decision (Action Level)	Decision (Action Level)	Decision (Action Level)	Decision (Action Level)	
iv.a) Decision statement	Determine whether any contaminant concentrations are greater than ESVs, or if the sum of Equilibrium Partitioning Sediment Benchmark Toxic Units (Σ ESBTU _{FCV}) > 1, or if the organic carbon normalized excess Simultaneously Extracted Metal (Σ SEM) > 150 μ mol/g _{oc} in the GMR sediments near the Site, or if the concentrations of arsenic are greater than its Probable Effects Concentration (PEC).	Determine whether any measurable input of contaminants from the Site, relative to upstream conditions, occurs in the GMR sediments near the Site.	Determine whether any measurable impact to aquatic life in the GMR occurs due to contaminants from the Site, relative to upstream conditions	Determine whether any contaminant concentrations are greater than ESVs, USEPA Residential soil criteria, Sum of Equilibrium Partitioning Sediment Benchmark Toxic Units (Σ ESBTU _{FCV}) > 1, or organic carbon normalized excess Simultaneously Extracted Metal (Σ SEM) > 150 μ mol/g _{oc} in the on-Site pond sediments near the Site.	
iv.b) Estimation statement & assumptions	--	--	--	--	

TABLE 3.5

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SEDIMENT INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINA, OHIO**

Medium: Investigation Phase: DQO Step:	Investigation Item: Comparison to Ecological Screening Values	GMR Sediment		Quarry Pond Sediments	
		Phase 1A	Phase 1B	Phase 2	Phase 1C
3 Identify Information Inputs:					
i) Information types needed	Sediment sample analysis is required to assess conditions in the GMR near the Site.	A Benthic community survey may be required to assess the impact to aquatic life in the GMR near the Site.	Sediment sample analysis is required to assess conditions in the Quarry Pond.		
ii) Information sources	- New data from the investigation will form the basis of assessment. The results from three previous sediment samples collected from the GMR and Quarry Pond, as well as results of soil samples will be considered during interpretation of the data obtained. - Sediment samples will be analyzed for PAHs, divalent metals (copper, cadmium, mercury, nickel, lead and zinc) using AVS/SEM analyses, and total metals (including arsenic).	- New data from the community survey will form the basis of assessment. The results from Phase 1A and 1B (see left) will be considered during interpretation of the data obtained.	- New data from the investigation will form the basis of assessment. The results from previous sediment samples collected from the Quarry Pond, as well as results of soil samples will be considered during interpretation of the data obtained. Sediment samples will be analyzed for PAHs, divalent metals (copper, cadmium, mercury, nickel, lead and zinc) using AVS/SEM analyses, and total metals (including arsenic).		
iii) Basis of Action Level	Action Levels are: - Final Chronic Values (FCV) for PAHs, $\sum \text{ESBTU}_{\text{FCV}} < 1$ - Excess SEM < 150 $\mu\text{mol/g}_{\text{oc}}$ - PEC values for arsenic	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on upstream conditions.	Population and community level response will be evaluated.	Action Levels are: - Final Chronic Values (FCV) for PAHs, $\sum \text{ESBTU}_{\text{FCV}} < 1$ - Excess SEM < 150 $\mu\text{mol/g}_{\text{oc}}$ - PEC values for arsenic	
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2010, CRA's Standard Operating Procedures, and the Quality Assurance Project Plan (CRA, September 2008). Organic carbon in sediments will be analyzed using the Lloyd Kahn or Walkley-Black methods. PAH results will be evaluated against $\sum \text{ESBTU}_{\text{FCV}}$, as detailed in USEPA, 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. EPA-600-R-02-013. Divalent metals results will be evaluated against the organic carbon normalized excess $\sum \text{SEM}$.	A benthic community survey will be completed in accordance with USEPA Rapid Bioassessment Protocols (EPA 841-B-99-002) or OEPAsessment methods (OEPAs, 1989. Biological criteria for the protection of aquatic life), depending on the habitat.	Methods are described in the Field Sampling Plan, CRA's Standard Operating Procedures, and the Quality Assurance Project Plan. Organic carbon in sediments will be analyzed using the Lloyd Kahn or Walkley-Black methods. PAH results will be evaluated against $\sum \text{ESBTU}_{\text{FCV}}$, as detailed in USEPA, 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. EPA-600-R-02-013. Metals results will be evaluated against the organic carbon normalized excess $\sum \text{SEM}$.		
4 Define the Boundaries of the Study:					
i) Target population, sample units	The target population is the upper (available) layer of sediments (2 - 4 inches below sediment/water interface) in the GMR adjacent to the Site. The sampling units are individual grab samples collected from the near-Site reaches of the GMR. Depositional areas will be targeted for sediment sample locations. Sediment samples will also be collected in depositional locations immediately downstream of any point discharges identified between the upstream dam and the southern Site boundary.	The target population is the upper (available) layer of sediments (2 - 4 inches below sediment/water interface) in the upstream sampling locations. The sampling units are individual grab samples collected from the upstream reaches of the GMR. Depositional areas will be targeted for sediment sample locations. Sediment samples will be collected in depositional locations immediately downstream of any point discharges identified between the upstream dam and east of the Dryden Road bridge.	The target population is the aquatic life in the GMR in the vicinity of the Site. The sampling units are composite samples collected from the GMR, divided by upstream, near-Site, and downstream reaches. Sampling efforts may be concentrated in near-shore habitats, where most species will be collected.	The target population is the upper (available) layer of sediments (2 - 4 inches below sediment/water interface) in the Quarry Pond. The sampling units are individual grab samples collected from the Quarry Pond. Depositional areas and areas where visual evidence of potential leachate migration is observed will be targeted for sediment sample locations.	
ii) Specify spatial boundaries	Near-Site sampling locations are those occurring to the west of the Dryden Road bridge (i.e., as surface water passes the Site), and these will be located on the near (south and east) shore of the GMR. Sediment samples will be collected from the top of the sediment layer (i.e., 2 - 4 inches below the sediment/water interface) in the GMR.	Upstream sampling locations are to the east of the Dryden Road bridge. Sediment samples will be collected from the top of the sediment layer (i.e., 2 - 4 inches below the sediment/water interface) in the GMR.	Upstream sampling locations are to the east of the Dryden Road bridge. Near-Site sampling locations are those occurring to the west of the Dryden Road bridge (i.e., as surface water passes the Site), and these will be located on the near (south and east) shore of the GMR. Downstream sampling locations are to the south of the City of Dayton Wastewater Treatment Plant.	Sediment samples will be collected from the top of the sediment layer (i.e., 2 - 4 inches below the sediment/water interface) in the Quarry Pond.	
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions forming the basis for the Action Levels.			The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions forming the basis for the Action Levels.	
iv) Identify any other practical constraints	Sampling may be postponed due to flooding or iced conditions in the GMR. If any dams/weirs are encountered, samples will be collected from the side of the dam closest to the Site (i.e., downstream of any upstream dams, and upstream of any downstream dams).			Sampling may be postponed due to flooding or iced conditions of the Quarry Pond.	
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	Comparisons to upstream conditions will be carried out on an individual-location basis.	Criteria in biological indices will be used to evaluate the impacts on aquatic life.	Comparisons to Action Levels will be carried out on an individual-location basis.	
v.b) Scale of estimates	--	--	--	--	

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SEDIMENT INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINA, OHIO

TABLE 3.5

Medium: Investigation Phase: DQO Step:	Investigation Item: Comparison to Ecological Screening Values	GMR Sediment		Quarry Pond Sediments	
		Phase 1A	Phase 1B	Phase 2	Phase 1C
5 <i>Develop the Analytic Approach:</i>	i.a) Specify Action Level	1) FCV for PAHs, $\sum \text{ESBTU}_{\text{FCV}} < 1$ 2) Excess SEM < 150 $\mu\text{mol/g}_{\text{oc}}$ 3) PEC for arsenic	Background Threshold Values based on upstream data, following USEPA's ProUCL Technical Guide (2010)	Critiera in biological indices, consisting of the Index of Well-Being (Gammon 1976; Gammon <i>et al.</i> 1981), the Index of Biotic Integrity (Karr 1981; Fausch <i>et al.</i> 1984), and the Invertebrate Community Index (DeShon <i>et al.</i> unpublished)	1) PEC values for arsenic metals 2) FCV for PAHs, $\sum \text{ESBTU}_{\text{FCV}} < 1$ 3) USEPA Industrial Soil criteria 4) Excess SEM < 150 $\mu\text{mol/gram}_{\text{oc}}$
	i.b) Specify estimator	--	--	--	--
	ii.a) Specify population parameter of interest and theoretical decision rule	Individual observations at near-Site sampling locations.		Cumulative observations at near-Site sampling locations.	Individual observations at near-Site sampling locations.
	ii.b) Specify estimation procedure	--	--	--	--
6 <i>Specify Performance or Acceptance Criteria:</i>	i.a) Set baseline (null) and alternative hypotheses	Baseline H_0 : sediment concentrations are less than Action Levels Alternative H_1 : sediment contaminant concentrations are greater than Action Levels	Baseline H_0 : Concentrations of Site-related chemicals in near-Site sediments are no different than upstream Alternative H_1 : Concentrations of Site-related chemicals in near-Site sediments contain contaminants at concentrations greater than upstream conditions	Baseline H_0 : aquatic ecosystem in near-Site reaches are no different than upstream Alternative H_1 : aquatic ecosystem in near-Site reaches is impaired in comparison to upstream conditions.	Baseline H_0 : sediment concentrations are less than Action Levels Alternative H_1 : sediment contaminant concentrations are greater than Action Levels
	i.b) Specify how uncertainty accounted for in estimate	--	--	--	--
	ii.a) Determine impact of decision errors (false positives/negatives)	N/A: no statistical test is employed (direct comparison to Action Levels)	- If a false positive (Type I) error occurs, unnecessary additional investigation may occur. - If a false negative (Type II) error occurs, conditions that are not due to background concentrations and pose potential risk to aquatic ecosystem and/or human receptors could persist.	- If a false positive (Type I) error occurs, unnecessary additional investigation may occur. - If a false negative (Type II) error occurs, conditions posing potential risk to the aquatic ecosystem could persist.	N/A: no statistical test is employed (direct comparison to Action Levels)
	ii.b) Specify confidence level for estimate	--	--	--	--
	iii) Specify "gray region" for test	N/A: no statistical test is employed (direct comparison to Action Levels)	For comparisons to upgradient conditions, the gray region will be set equal to a difference in means (on-Site and upgradient) of one standard deviation of the upgradient data.	--	N/A: no statistical test is employed (direct comparison to Action Levels)
	iv.a) Set tolerable limits on decision errors	N/A: no statistical test is employed (direct comparison to Action Levels)	The Background Threshold Values will be calculated using a 95 percent confidence level, making the false positive rate no greater than 5 percent. Limits on the false negative rate are not appropriate for comparisons of individual results to threshold values.	--	N/A: no statistical test is employed (direct comparison to Action Levels)
	iv.b) Specify performance or acceptance criteria	Total sediment concentrations will be used in the comparison to Action Levels, rather than subtracting background concentrations, for evaluation in the Ecological Risk Assessment.		--	Total sediment concentrations will be used in the comparison to Action Levels, rather than subtracting background concentrations, for evaluation in the Ecological Risk Assessment.
7 <i>Develop the Plan for Obtaining Data:</i>	i) Select sampling design	Near-Site samples will be collected close to the proximate (south/east) shore of the river at (i) the upstream edge of the Site, including both a near-shore and far-shore sample; (ii) mid-Site, downgradient of monitoring wells containing highest VOC concentrations on the side of the Site nearest the river; (iii) further downstream in the mid-Site region, halfway between (ii) and (iv); (iv) downstream of the main Site, upstream of the City's WWTP outlet; and (v) downstream of the entire Site. Samples will be biased towards locations with fine-grained sediments with higher organic carbon (based on visual observation). Proposed sample locations will be adjusted in the field to ensure that the samples are collected from sediments most representative of potential worst-case issues.	Upstream samples will be collected at 9 locations to provide a suitable data set (per USEPA's ProUCL Technical Guide, 2010) for the calculation of Background Threshold Values. Upstream samples will be collected along 3 transects of 3 samples each, regularly spaced downstream of the upstream dam, and upstream low-head of the Site. Near-Site samples will be collected as described in Phase 1A (see left).	Near-Site samples will be collected close to the proximate (south/east) shore of the river at (i) the upstream edge of the Site, including both a near-shore and far-shore sample; (ii) mid-Site, downgradient of monitoring wells containing highest VOC concentrations on the side of the Site nearest the river; (iii) further downstream in the mid-Site region, halfway between (ii) and (iv); (iv) downstream of the main Site, upstream of the City's WWTP outlet; and (v) downstream of the entire Site. The sampling effort may be concentrated in near-shore habitats where most species will be collected and will be biased toward areas where the greatest sediment impacts were identified during the Phase 1A and 1B investigations.	Up to 9 samples will be collected from the Quarry Pond, along 3 transects of 3 samples each. Samples will be biased towards locations with fine-grained sediments with higher organic carbon (based on visual observation). Proposed sample locations will be adjusted in the field to ensure that the samples are collected from sediments most representative of potential worst-case issues.
	ii) Specify/evaluate key assumptions supporting the design	The mechanisms of contaminant transport from the Site to river sediments, i.e., via groundwater migration and seepage or via erosion and runoff, would result in greatest impacts (if any) near-shore and potentially, due to groundwater seepage, midstream. Sampling locations have been selected reflecting this, and covering different potential directions of transport and deposition, covering the full range of possibilities from the Site.	The calculation Background Threshold Values (statistical limits on an upper percentile, e.g. 95th) for the upstream population of sediments depends on data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.	The mechanisms of contaminant transport from the Site to river sediments, i.e., via groundwater migration and seepage or via erosion and runoff, would result in greatest impacts (if any) near-shore. Sampling locations have been selected reflecting this, and covering different potential directions of transport and deposition, covering the full range of possibilities from the Site.	The mechanisms of contaminant transport from the Site to pond sediments, i.e., via groundwater migration and seepage or via erosion and runoff, would result in greatest impacts (if any) near-shore. Sampling locations have been selected reflecting this, and covering different potential directions of transport and deposition, covering the full range of possibilities from the Site.

TABLE 3.5

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – SEDIMENT INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO**

DQO Step:	Medium: Investigation Phase:	GMR Sediment			Quarry Pond Sediments Phase 1C
		Phase 1A	Phase 1B	Phase 2	
	Investigation Item:	Comparison to Ecological Screening Values	Comparison to Upstream Conditions	Benthic Sampling	Comparison to Ecological Screening Value

Notes:

- (i) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").
If investigating an "estimation problem", follow ".b" items.
- Item not applicable for the type of problem (decision vs. estimation) investigated.
The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman, Rawa Fleisher, Angela Bown (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineers); Mark Hilverda (CRA project hydrogeologist); Leslie Patterson (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – FLOODPLAIN SOIL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINA, OHIO

DQO Step	Medium: Investigation Phase: Investigation Item:	Floodplain Soil		
		Phase 1A Comparison to Site-Specific Risk Values	Phase 1B Comparison to Background Reference Conditions	Phase 2 Additional sampling (if necessary) to develop risk assessment exposure estimates
1 <i>State the Problem</i>	i) Problem description	Potential risk to industrial workers from exposure to on-Site soils has been identified in a human health risk assessment. It is not known if potential soil contamination in off-Site locations (a) poses risks to human receptors due to recreational use, and (b) is a result of migration from the Site. Analysis of off-Site soil samples is required to make these assessments. It is also unknown whether off-Site soils pose ecological risks either in-situ or if soils are eroded and enter the Great Miami River (GMR).		If, during Phase 1, floodplain soil containing contaminants at concentrations greater than screening values and background reference conditions is identified, characterization of conditions within the exposure unit is required for risk assessment purposes.
	ii) Planning team iii) Conceptual model		See note at bottom - Cover material at the Site is limited or non-existent, which could lead to erosional run-off of contaminants towards the floodplain of the GMR. - In addition, movement of contaminants in dust particles carried by wind may result in deposition of contaminants off-Site. - Soil contaminants are assumed to have been deposited by erosion and mixed by subsequent flooding events.	
	iv) General intended use for data	The data collected will be screened against health-based risk values. The goal of the investigation is to identify risks associated with surficial soil in the floodplain. The goal is not to identify individual areas of contamination.	The data collected from sampling locations along the Site's boundaries will be compared to upstream floodplain soil conditions, to determine if there are any measurable inputs of contaminants from the Site. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The collected data will be used to generate human health exposure estimates for a risk assessment. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
	v) Resources, constraints, deadlines	Sufficient resources will be committed to sample off-Site soil under the OU2 RI/FS work plan. Sampling may be postponed due to flooding, and could be constrained due to access agreements in off-Site areas.		
2 <i>Goals of the Study:</i>	i) Primary study question	Do off-Site floodplain soils contain contaminants at concentrations that pose a potential risk to receptors, based on the use of screening criteria, i.e., residential soil criteria, and/or Site-specific risk-based values?	Does the Site add contaminants to soil off-Site in the floodplain of the GMR near the Site?	Do off-Site soils contain contaminants originating from the Site that may pose unacceptable health risks?
	ii) Alternate outcomes or actions	- If sampling demonstrates that any contaminants in soil are less than risk-based screening levels/criteria, no further sampling is planned. - If sampling demonstrates that contaminant concentrations are greater than screening levels/criteria, and greater than background reference conditions (see Phase 1B to right), further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates conditions adjacent to the Site are not greater than those found in background reference soils, no further sampling is planned. - If sampling demonstrates conditions are greater than background, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or remediation may be warranted.	- If sampling demonstrates that health risks are acceptable, no further action is required. - If sampling demonstrates unacceptable risks, further evaluation, risk management and/or remediation would be required.
	iii) Type of problem (decision or estimation) ¹ iv.a) Decision statement	Decision (Action Level)	Decision (Action Level)	Estimation
	iv.b) Estimation statement & assumptions	Determine whether any contaminant concentrations are greater than USEPA residential soil regional screening levels (RSLs) or site-specific risk values in off-Site floodplain soil near the Site.	Determine whether any measurable input of contaminants from the Site, relative to background reference conditions, occurs in off-Site floodplain soil near the Site.	--
3 <i>Identify Information Inputs:</i>	i) Information types needed	- Soil sample analysis is required to assess conditions in the floodplain of the GMR near the Site. - Soil samples will be collected at locations adjacent to (i.e., downgradient of) known on-Site issues, and also biased toward erosional areas.		- This would be a supplemental data collection effort, with analyses performed on soil samples obtained to fill in any data gaps across the exposure area.
	ii) Information sources	- New data from the investigation will form the basis of assessment. The results from three previous sediment samples collected from the GMR will be considered during interpretation of the data obtained.		- New data from the investigation will form the basis of assessment. Any available previous data (e.g., from Phase 1), within the exposure area would also be used.
	iii) Basis of Action Level	Action Levels are: - USEPA Residential soil RSLs	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on background reference conditions.	--
	iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).		

TABLE 3.6

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – FLOODPLAIN SOIL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINA, OHIO**

4 Define the Boundaries of the Study:

i) Target population, sample units	The target population is surficial soil on the floodplain of the GMR near the Site. CRA has defined the exposure unit of the floodplain to be the bike path/recreational trail. The sampling units are individual samples collected from surface soil located between the Site embankment and the bike path.	The sampling units are individual samples collected from surface soil from background reference sampling locations. Background reference sampling locations will be identified in areas outside a reasonable zone of potential influence (via surface runoff or substantial airborne dust deposition) for the Site.	Target population is surficial floodplain soils comprising the exposure unit for assessment of exposure risks for human receptors.
ii) Specify spatial boundaries	The spatial boundaries of the floodplain soil sampling locations are the floodplain soil of the GMR, located between the Site embankment and the bike path/recreational trail.	Distance from the Site and prevailing wind directions will be considered in making this determination.	The spatial boundaries are the limits of the surficial soils in the identified off-Site exposure area (based on Phase 1 findings).
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions of the Action Levels.		
iv) Identify any other practical constraints	Due to the presence of a high pressure gas line in the floodplain, soil samples will be hand-dug. If different surficial soil substrates are encountered (e.g., silt vs. sand vs. clay), these differences may require additional sampling (e.g., further reference samples) to appropriately evaluate potential Site-related impacts. Off-Site sampling may be restricted by permission of property owners, e.g. for background locations.		Further practical constraints are not anticipated for sampling of floodplain soils near to the Site.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	Comparisons to background reference conditions will be carried out on an individual-location basis.	--
v.b) Scale of estimates	--	--	The scale of the exposure estimate is to be identified in a Site-specific risk

5 Develop the Analytic Approach:

i.a) Specify Action Level	1) USEPA Residential Soil RSLs	Background Threshold Values based on background reference data, following USEPA's ProUCL Technical Guide (2010)	--
i.b) Specify estimator	--	--	The arithmetic mean (per USEPA RAGS requirements) surface soil concentration of each contaminant that is greater than screening criteria.
ii.a) Specify population parameter of interest and theoretical decision rule	Individual observations at near-Site sampling locations.		--
ii.b) Specify estimation procedure	--	--	The study will estimate the mean concentration of the exposure unit population represented by the soil samples obtained.

6 Specify Performance or Acceptance Criteria:

i.a) Set baseline (null) and alternative hypotheses	Baseline H ₀ : soil sample concentrations are less than Action Levels Alternative H ₁ : soil samples contaminated at concentrations greater than Action Levels	Baseline H ₀ : near-Site floodplain soil sample concentrations are no different than reference Alternative H ₁ : near-Site floodplain soil samples contain contaminants at concentrations greater than reference conditions	--
i.b) Specify how uncertainty accounted for in estimate	--	--	Uncertainty will be accounted for using a confidence interval on the population mean (per USEPA RAGS guidance).
ii.a) Determine impact of decision errors (false positives/negatives)	N/A: no statistical test is employed (direct comparison to Action Levels)	- If a false positive (Type I) error occurs, unnecessary additional investigation (Phase 2) may occur. - If a false negative (Type II) error occurs, conditions that are not due to background concentrations of contaminants and that pose potential health risks to receptors persist.	--
ii.b) Specify confidence level for estimate	--	--	The confidence level of the estimate will be 95 percent, unless specified otherwise (based on data distribution and/or the presence of non-detect results) in USEPA's ProUCL Technical Guide (2010).
iii) Specify "gray region" for test	N/A: no statistical test is employed (direct comparison to Action Levels)	N/A: since comparing individual concentrations against reference conditions, no statistical test is employed	--
iv.a) Set tolerable limits on decision errors	N/A: no statistical test is employed (direct comparison to Action Levels)	The Background Threshold Values will be calculated using a 95 percent confidence level, making the false positive rate no greater than 5 percent. Limits on the false negative rate are not appropriate for comparisons of individual results to threshold values.	--

**SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS – FLOODPLAIN SOIL INVESTIGATION
OU2 REMEDIAL INVESTIGATION SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINNE, OHIO**

TABLE 3.6

iv.b) Specify performance or acceptance criteria	--	--	The lesser value of the 95 percent UCL on the population mean or the maximum individual measurement will be used for comparison to risk-based criteria.
--	----	----	---

7 Develop the Plan for Obtaining Data:

i) Select sampling design	Near-Site surficial soil samples will be collected on the floodplain. These include (i) the upgradient edge of the Site; (ii) mid-Site, downgradient of monitoring wells containing highest VOC concentrations on the side of the Site nearest the river; (iii) further downgradient, halfway between (ii) and (iv); and (iv) at the furthest downgradient boundary of the Site.	Background reference samples will be collected at 10 locations to provide a suitable data set (per USEPA's ProUCL Technical Guide, 2010) for the calculation of Background Threshold Values. Near-Site samples will be collected as described in Phase 1A (see left).	A minimum of 10 samples, per USEPA's ProUCL Technical Guide (2010), spaced on a regular grid with random origin (i.e., a systematic random sampling design), will be obtained for each exposure area identified in the risk assessment.
	Approximately 15 surficial soil samples will be collected from the near-Site portion of the floodplain around the recreational trail.		Samples collected during Phase 1 will be included within the 10 sample data set.
ii) Specify/evaluate key assumptions supporting the design	Contaminant transport from the Site to floodplain soils via erosion/runoff is expected to result in greatest impacts (if any) closest to the Site at the base of the embankment. Sampling locations have been selected reflecting this (i.e., including locations biased towards areas with highest contamination potential), and cover all different potential directions of transport/deposition from the Site.	The calculation Background Threshold Values (statistical limits on an upper percentile, e.g. 95th) for the reference population of surficial soils depends on data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.	The calculation of 95 percent upper confidence limits on a population mean makes assumptions of data characteristics (e.g., distribution and proportion of detected values), as fully discussed in the USEPA ProUCL Technical Guide (2010). Additionally, the presence of outlying values will be tested, and if present their impact on the values obtained evaluated.

Notes:

- (1) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").
If investigating an "estimation problem", follow ".b" items.
Once the baseline risk assessment for OU2 has been performed, possible remedial goals (PRGs) will be derived from the calculator using site-specific risks.
- Item not applicable for the type of problem (decision vs. estimation) investigated.

The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager); Wesley Dyck, Daniela Araujo (CRA statistics expert); April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts); Paul Wiseman, Rawwa Fleisher, Angela Bown (CRA chemists/quality assurance staff); Julian Hayward, Andrew Sousa, Valerie Chan (CRA project engineers); Mark Hilverda (CRA project hydrogeologist); Leslie Patterson (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

APPENDIX A

SOUTHERN PARCELS GROUNDWATER ANALYTICAL RESULTS

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-13		VAS-13		VAS-13		VAS-13		VAS-13		VAS-13	
Sample ID:	GW-38443-120108-DD-144		GW-38443-120208-DD-145		GW-38443-120208-DD-146		GW-38443-120208-DD-147		GW-38443-120208-DD-148		GW-38443-120208-DD-149	
Sample Date:	12/1/2008		12/2/2008		12/2/2008		12/2/2008		12/2/2008		12/2/2008	
Sample Depth:	12-17 ft BGS		17-22 ft BGS		22-27 ft BGS		27-32 ft BGS		32-37 ft BGS		37-42 ft BGS	
<i>USEPA Regional Screening Levels [1]</i>												
Parameter	MCL a	Tap Water b										
Volatiles												
1,1,1-Trichloroethane	0.2	7.5	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.007	0.26	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Acetone	-	12	0.05 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
Benzene	0.005	0.00039	0.005 U	0.001 U	0.001 U	0.00023 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.005 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Bromomethane (Methyl bromide)	-	0.007	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cyclohexane	-	13	0.005 U	0.00013 J	0.001 U	0.00027 J	0.00014 J	0.001 U	0.001 U	0.001 U	0.001 U	0.00016 J
Dibromochloromethane	0.08	0.00015	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	0.7	0.0013	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	0.025 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.18	0.004</td								

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-13	VAS-13	VAS-13							
Sample ID:	GW-38443-120108-DD-144	GW-38443-120208-DD-145	GW-38443-120208-DD-146	GW-38443-120208-DD-147	GW-38443-120208-DD-148	GW-38443-120208-DD-149	GW-38443-120208-DD-150	GW-38443-120208-DD-151		
Sample Date:	12/1/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008		
Sample Depth:	12-17 ft BGS	17-22 ft BGS	22-27 ft BGS	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS		
<i>USEPA Regional Screening Levels [1]</i>										
Parameter	MCL <i>a</i>	Tap Water <i>b</i>								
<i>Semi-Volatiles</i>										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	-	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	-	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	-	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	-	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	-	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	0.001 U	-	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	-	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 UJ	0.001 UJ	-	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	0.002 U	-	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	0.002 U	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	-	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	-	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloroaniline	-	0.00032	0.002 U	0.002 U	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	0.001 U	-	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	0.002 U	-	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	0.005 U	-	-	-	-	-	-
Acenaphthene	-	0.4	0.0002 U	0.0002 U	-	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	0.001 U	-	-	-	-	-	-
Anthracene	-	1.3	0.0002 U	0.0002 U	-	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	0.001 U	-	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	0.001 U	-	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	-	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 UJ	0.001 UJ	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.00089 J	0.002 U	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	-	-	-	-	-	-
Caprolactam	-	7.7	0.005 UJ	0.005 UJ	-	-	-	-	-	-
Carbazole	-	-	0.001 U	0.001 U	-	-	-	-	-	-
Chrysene	-	0.0029	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenzo(furan	-	0.0058	0.001 U	0.001 U	-	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	0.001 U	-	-	-	-	-	-
Dimethyl phthalate	-	-	0.001 U	0.001 U	-	-	-	-	-	-
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	-	-	-	-	-	-

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-13	VAS-13	VAS-13							
Sample ID:	GW-38443-120108-DD-144	GW-38443-120208-DD-145	GW-38443-120208-DD-146	GW-38443-120208-DD-147	GW-38443-120208-DD-148	GW-38443-120208-DD-149	GW-38443-120208-DD-150	GW-38443-120208-DD-151		
Sample Date:	12/1/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008	12/2/2008		
Sample Depth:	12-17 ft BGS	17-22 ft BGS	22-27 ft BGS	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS		
<i>USEPA Regional Screening Levels [1]</i>										
<i>Parameter</i>	<i>MCL</i>	<i>Tap Water</i>								
	<i>a</i>	<i>b</i>								
Fluoranthene	-	0.63	0.0002 U	0.0002 U	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 UJ	0.01 UJ	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	0.001 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	0.001 U	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	0.0002 U	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	-	-	-	-	-	-
Phenanthrene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	0.001 U	-	-	-	-	-	-
Pyrene	-	0.087	0.0002 U	0.0002 U	-	-	-	-	-	-
<i>Metals</i>										
Arsenic	0.01	0.000045	0.0436 ^{ab}	0.165 ^{ab}	0.101 ^{ab}	0.0936 ^{ab}	0.0322 ^{ab}	0.0057 ^b	0.0063 ^b	0.0356 ^{ab}
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-	-
Lead	0.015	-	0.0408 ^a	0.033 ^a	0.0178 ^a	0.0375 ^a	0.0127	0.0018	0.0023	0.0319 ^a
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-1

**HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO**

<i>Sample Location:</i>	VAS-13		VAS-13		VAS-13		VAS-13		VAS-13		VAS-13	
<i>Sample ID:</i>	GW-38443-120208-DD-152		GW-38443-120308-DD-153		GW-38443-120308-DD-154		GW-38443-120308-DD-155		GW-38443-120308-DD-156		GW-38443-120308-DD-157	
<i>Sample Date:</i>	12/2/2008		12/3/2008		12/3/2008		12/3/2008		12/3/2008		12/3/2008	
<i>Sample Depth:</i>	52-57 ft BGS		67-72 ft BGS		72-77 ft BGS		77-82 ft BGS		82-87 ft BGS		87-92 ft BGS	
<i>USEPA Regional Screening Levels [1]</i>												
<i>Parameter</i>	<i>MCL</i>	<i>Tap Water</i>										
	<i>a</i>	<i>b</i>										
<u>Volatiles</u>												
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U								
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U								
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U								
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.001 U	0.00043 J						
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U								
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U								
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.0000032	0.002 U	0.002 U								
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U								
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U								
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U								
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U								
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U								
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U								
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U								
2-Hexanone	-	0.034	0.01 U	0.01 U								
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U								
Acetone	-	12	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U						
Benzene	0.005	0.00039	0.001 U	0.001 U								
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U								
Bromoform	0.08	0.0079	0.001 UJ	0.001 U	0.001 U	0.001 U						
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U								
Carbon disulfide	-	0.72	0.001 U	0.001 U								
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U								
Chlorobenzene	0.1	0.072	0.001 U	0.001 U								
Chloroethane	-	21	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ						
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U								
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U								
cis-1,2-Dichloroethene	0.07	0.028	0.00021 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00024 J	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.001 U	0.001 U								
Cyclohexane	-	13	0.001 U	0.00017 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00014 J
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U								
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 U	0.001 UJ	0.001 UJ	0.001 U						
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U								
Isopropyl benzene	-	0.39	0.001 U	0.001 U								
Methyl acetate	-	16	0.01 U	0.01 U								
Methyl cyclohexane	-	-	0.001 U	0.001 U								
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U								
Methylene chloride	0.005	0.0099	0.001 U	0.001 U								
Styrene	0.1	1.1	0.001 U	0.001 U								
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U								
Toluene	1	0.86	0.0015	0.00057 J	0.00043 J	0.00043 J	0.00044 J	0.00044 J	0.00045 J	0.00046 J	0.0003 J	0.0023
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U								
trans-1,3-Dichloropropene	-	-										

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-13	VAS-19							
Sample ID:	GW-38443-120208-DD-152	GW-38443-120308-DD-153	GW-38443-120308-DD-154	GW-38443-120308-DD-155	GW-38443-120308-DD-156	GW-38443-120308-DD-157	GW-38443-120308-DD-158	GW-38443-121508-DD-189	
Sample Date:	12/2/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/15/2008	
Sample Depth:	52-57 ft BGS	67-72 ft BGS	72-77 ft BGS	77-82 ft BGS	82-87 ft BGS	87-92 ft BGS	92-97 ft BGS	17-22 ft BGS	
<i>USEPA Regional Screening Levels [1]</i>									
Parameter	MCL <i>a</i>	Tap Water <i>b</i>							
Semi-Volatiles									
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	0.001 U	-	-	-	0.001 U	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	0.005 U	-	-	-	0.005 U	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	0.005 U	-	-	-	0.005 U	0.005 U
2,4-Dichlorophenol	-	0.035	-	0.002 U	-	-	-	0.002 U	0.002 U
2,4-Dimethylphenol	-	0.27	-	0.002 U	-	-	-	0.002 U	0.002 U
2,4-Dinitrophenol	-	0.03	-	0.005 U	-	-	-	0.005 U	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	0.005 U	-	-	-	0.005 U	0.005 U
2,6-Dinitrotoluene	-	0.015	-	0.005 U	-	-	-	0.005 U	0.005 U
2-Chloronaphthalene	-	0.55	-	0.001 U	-	-	-	0.001 U	0.001 U
2-Chlorophenol	-	0.071	-	0.001 U	-	-	-	0.001 U	0.001 U
2-Methylnaphthalene	-	0.027	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
2-Methylphenol	-	0.72	-	0.001 U	-	-	-	0.001 U	0.001 U
2-Nitroaniline	-	0.15	-	0.002 U	-	-	-	0.002 U	0.002 U
2-Nitrophenol	-	-	-	0.002 U	-	-	-	0.002 U	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	0.005 U	-	-	-	0.005 U	0.005 U
3-Nitroaniline	-	-	-	0.002 U	-	-	-	0.002 U	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	0.005 U	-	-	-	0.005 U	0.005 U
4-Bromophenyl phenyl ether	-	-	-	0.002 U	-	-	-	0.002 U	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	0.002 U	-	-	-	0.002 U	0.002 U
4-Chloroaniline	-	0.00032	-	0.002 U	-	-	-	0.002 U	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	0.002 U	-	-	-	0.002 U	0.002 U
4-Methylphenol	-	1.4	-	0.001 U	-	-	-	0.001 U	0.001 U
4-Nitroaniline	-	0.0033	-	0.002 U	-	-	-	0.002 U	0.002 U
4-Nitrophenol	-	-	-	0.005 U	-	-	-	0.005 U	0.005 U
Acenaphthene	-	0.4	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Acenaphthylene	-	-	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Acetophenone	-	1.5	-	0.001 U	-	-	-	0.001 U	0.001 U
Anthracene	-	1.3	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Atrazine	0.003	0.00026	-	0.001 U	-	-	-	0.001 U	0.001 U
Benzaldehyde	-	1.5	-	0.001 U	-	-	-	0.001 U	0.001 U
Benzo(a)anthracene	-	0.000029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Benzo(g,h,i)perylene	-	-	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	0.001 U	-	-	-	0.001 U	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	0.001 U	-	-	-	0.001 U	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	0.001 U	-	-	-	0.001 U	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	0.0011 J	-	-	-	0.002 U	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	-	0.001 U	-	-	-	0.001 U	0.001 U
Caprolactam	-	7.7	-	0.005 U	-	-	-	0.005 U	0.005 UJ
Carbazole	-	-	-	0.001 U	-	-	-	0.001 U	0.001 U
Chrysene	-	0.0029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	0.0002 U	-	-	-	0.0002 U	0.0002 U
Dibenzo(furan	-	0.0058	-	0.001 U	-	-	-	0.001 U	0.001 U
Diethyl phthalate	-	11	-	0.001 U	-	-	-	0.001 U	0.001 U
Dimethyl phthalate	-	-	-	0.001 U	-	-	-	0.001 U	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	-	0.001 U	-	-	-	0.001 U	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	0.001 U	-	-	-	0.001 U	0.001 U

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-13	VAS-19							
Sample ID:	GW-38443-120208-DD-152	GW-38443-120308-DD-153	GW-38443-120308-DD-154	GW-38443-120308-DD-155	GW-38443-120308-DD-156	GW-38443-120308-DD-157	GW-38443-120308-DD-158	GW-38443-120308-DD-159	GW-38443-121508-DD-189
Sample Date:	12/2/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/3/2008	12/15/2008
Sample Depth:	52-57 ft BGS	67-72 ft BGS	72-77 ft BGS	77-82 ft BGS	82-87 ft BGS	87-92 ft BGS	92-97 ft BGS	17-22 ft BGS	
<i>USEPA Regional Screening Levels [1]</i>									
Parameter	MCL <i>a</i>	Tap Water <i>b</i>							
Fluoranthene	-	0.63	-	0.0002 U	-	-	-	-	0.0002 U
Fluorene	-	0.22	-	0.0002 U	-	-	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	0.0002 U	-	-	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	-	0.001 U	-	-	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	0.01 U	-	-	-	-	0.01 U
Hexachloroethane	-	0.00079	-	0.001 U	-	-	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	0.0002 U	-	-	-	-	0.0002 U
Isophorone	-	0.067	-	0.001 U	-	-	-	-	0.001 U
Naphthalene	-	0.00014	-	0.0002 U	-	-	-	-	0.0002 U
Nitrobenzene	-	0.00012	-	0.001 U	-	-	-	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	0.001 U	-	-	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	0.001 U	-	-	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	-	0.005 U	-	-	-	-	0.005 U
Phenanthrene	-	-	-	0.0002 U	-	-	-	-	0.0002 U
Phenol	-	4.5	-	0.001 U	-	-	-	-	0.001 U
Pyrene	-	0.087	-	0.0002 U	-	-	-	-	0.0002 U
<i>Metals</i>									
Arsenic	0.01	0.000045	0.0258 ^{ab}	0.0203 ^{ab}	0.0171 ^{ab}	0.0165 ^{ab}	0.0131 ^{ab}	0.0174 ^{ab}	0.0125 ^{ab}
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-
Lead	0.015	-	0.023 ^a	0.019 ^a	0.0141	0.0123	0.0083	0.0132	0.0066
Lead (dissolved)	0.015	-	-	-	-	-	-	-	0.18 ^a

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19		VAS-19		VAS-19		VAS-19		VAS-19		VAS-19		VAS-19			
Sample ID:	GW-38443-121508-DD-190		GW-38443-121508-DD-191		GW-38443-121508-DD-192		GW-38443-121508-DD-193		GW-38443-121608-DD-194		GW-38443-121608-DD-195		GW-38443-121608-DD-196		GW-38443-121608-DD-197	
Sample Date:	12/15/2008		12/15/2008		12/15/2008		12/15/2008		12/16/2008		12/16/2008		12/16/2008		12/16/2008	
Sample Depth:	27-32 ft BGS		32-37 ft BGS		37-42 ft BGS		42-47 ft BGS		47-52 ft BGS		47-52 ft BGS		52-57 ft BGS		57-62 ft BGS	
Parameter	USEPA Regional Screening Levels [1]		Duplicate													
	MCL	Tap Water a	Tap Water b													
Volatiles																
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.00022 J	0.00022 J	0.00022 J	0.00022 J	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0015 J	0.0015 J	
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.01 U	0.013 U	0.013 U	0.013 U	0.013 U	0.0067 U	0.0067 U	
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.067 U	0.067 U	0.033 U	0.033 U	
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.067 U	0.067 U	0.033 U	0.033 U	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.067 U	0.067 U	0.033 U	0.033 U	
Acetone	-	12	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.067 U	0.067 U	0.033 U	0.033 U	
Benzene	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Bromoform	0.08	0.0079	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Chloroethane	-	21	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0033 U	0.0033 U	
cis-1,2-Dichloroethene	0.07	0.028	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0049 J	0.0052 J	0.0052 J	0.0051 J	0.0051 J	0.031 ^b	0.031 ^b	
cis-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 UJ	0.0067 UJ	0.0067 UJ	0.0067 UJ	0.0033 UJ	0.0033 UJ	
Cyclohexane	-	13	0.0002 J	0.00018 J	0.00018 J	0.00018 J	0.00018 J	0.00018 J	0.005 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U</td			

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19 GW-38443-121508-DD-190	VAS-19 GW-38443-121508-DD-191	VAS-19 GW-38443-121508-DD-192	VAS-19 GW-38443-121508-DD-193	VAS-19 GW-38443-121608-DD-194	VAS-19 GW-38443-121608-DD-195	VAS-19 GW-38443-121608-DD-196	VAS-19 GW-38443-121608-DD-197
Sample ID:	12/15/2008	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008
Sample Date:	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS	47-52 ft BGS	52-57 ft BGS	57-62 ft BGS
Sample Depth:								
USEPA Regional Screening Levels [1]								Duplicate
Parameter	MCL <i>a</i>	TapWater <i>b</i>						
Semi-Volatiles								
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 U	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	-	-	-	-	-
4-Chloroaniline	-	0.00032	0.002 U	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	-	-	-	-	-
Acenaphthene	-	0.4	0.00021	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	-	-	-	-	-
Anthracene	-	1.3	0.00021	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	0.00057 ^b	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.0000029	0.0011 ^{ab}	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	0.0011 ^b	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.00029	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	0.00033 ^b	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	-	-	-	-	-
Caprolactam	-	7.7	0.005 UJ	-	-	-	-	-
Carbazole	-	-	0.001 U	-	-	-	-	-
Chrysene	-	0.0029	0.00055	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	-	-	-	-	-
Dibenzo(furan	-	0.0058	0.001 U	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	-	-	-	-	-
Dimethyl phthalate	-	-	0.001 U	-	-	-	-	-
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	-	-	-	-	-

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19								
Sample ID:	GW-38443-121508-DD-190	GW-38443-121508-DD-191	GW-38443-121508-DD-192	GW-38443-121508-DD-193	GW-38443-121608-DD-194	GW-38443-121608-DD-195	GW-38443-121608-DD-196	GW-38443-121608-DD-197	GW-38443-121608-DD-197
Sample Date:	12/15/2008	12/15/2008	12/15/2008	12/15/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008
Sample Depth:	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS	47-52 ft BGS	52-57 ft BGS	52-57 ft BGS	57-62 ft BGS
<i>USEPA Regional Screening Levels [1]</i>									
<i>Parameter</i>	<i>MCL</i>	<i>Tap Water</i>							
	<i>a</i>	<i>b</i>							
Fluoranthene	-	0.63	0.0011	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	0.00024 ^b	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	-	-	-	-	-	-
Phenanthrene	-	-	0.00074	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	-	-	-	-	-	-
Pyrene	-	0.087	0.00091	-	-	-	-	-	-
<i>Metals</i>									
Arsenic	0.01	0.000045	0.049 ^{ab}	0.0158 ^{ab}	0.0526 ^{ab}	0.0153 ^{ab}	0.0196 ^{ab}	0.0304 ^{ab}	0.0202 ^{ab}
Arsenic (dissolved)	0.01	0.000045	-	-	0.0032 J ^b	-	-	-	0.003 J ^b
Lead	0.015	-	0.226 ^a	0.0666 ^a	0.142 ^a	0.0386 ^a	0.0494 ^a	0.066 ^a	0.0497 ^a
Lead (dissolved)	0.015	-	-	-	0.001 U	-	-	-	0.001 U

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19	VAS-20							
Sample ID:	GW-38443-121608-DD-198	GW-38443-121608-DD-199	GW-38443-121608-DD-200	GW-38443-121608-DD-201	GW-38443-121608-DD-202	GW-38443-121608-DD-203	GW-38443-121608-DD-204	GW-38443-121608-DD-205	GW-38443-011109-KMV-229
Sample Date:	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	1/11/2009
Sample Depth:	62-67 ft BGS	67-72 ft BGS	72-77 ft BGS	77-82 ft BGS	82-87 ft BGS	87-92 ft BGS	92-97 ft BGS	92-97 ft BGS	22-27 ft BGS
<i>USEPA Regional Screening Levels [1]</i>									
Parameter	MCL <i>a</i>	Tap Water <i>b</i>							
Volatiles									
1,1,1-Trichloroethane	0.2	7.5	0.002 U	0.001 U					
1,1,2,2-Tetrachloroethane	-	0.000066	0.002 U	0.001 U					
1,1,2-Trichloroethane	0.005	0.00024	0.002 U	0.001 U					
1,1-Dichloroethane	-	0.0024	0.0014 J	0.0018	0.0021	0.0023	0.0012	0.00093 J	0.001 U
1,1-Dichloroethene	0.007	0.26	0.002 U	0.001 U					
1,2,4-Trichlorobenzene	0.07	0.00099	0.002 U	0.001 U					
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.004 U	0.002 U					
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.002 U	0.001 U					
1,2-Dichlorobenzene	0.6	0.28	0.002 U	0.001 U					
1,2-Dichloroethane	0.005	0.00015	0.002 U	0.001 U	0.001 U	0.00032 ^b	0.00025 ^b	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.002 U	0.001 U					
1,3-Dichlorobenzene	-	-	0.002 U	0.001 U					
1,4-Dichlorobenzene	0.075	0.00042	0.002 U	0.001 U					
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.02 U	0.01 U					
2-Hexanone	-	0.034	0.02 U	0.01 U					
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.02 U	0.01 UJ					
Acetone	-	12	0.02 U	0.01 U					
Benzene	0.005	0.00039	0.002 U	0.001 U					
Bromodichloromethane	0.08	0.00012	0.002 U	0.001 U					
Bromoform	0.08	0.0079	0.002 U	0.001 UJ					
Bromomethane (Methyl bromide)	-	0.007	0.002 U	0.001 U					
Carbon disulfide	-	0.72	0.002 U	0.001 U					
Carbon tetrachloride	0.005	0.00039	0.002 U	0.001 U					
Chlorobenzene	0.1	0.072	0.002 U	0.001 U					
Chloroethane	-	21	0.0007 J	0.00038 J	0.00036 J	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.002 U	0.001 U					
Chloromethane (Methyl chloride)	-	0.19	0.002 U	0.001 U					
cis-1,2-Dichloroethene	0.07	0.028	0.03 ^b	0.019	0.019	0.012	0.0077	0.0034	0.0029
cis-1,3-Dichloropropene	-	-	0.002 U	0.001 UJ					
Cyclohexane	-	13	0.002 U	0.00026 J	0.0002 J	0.00017 J	0.0002 J	0.00018 J	0.0002 J
Dibromochloromethane	0.08	0.00015	0.002 U	0.001 U					
Dichlorodifluoromethane (CFC-12)	-	0.19	0.002 U	0.001 UJ					
Ethylbenzene	0.7	0.0013	0.002 U	0.001 U	0.00045 J				
Isopropyl benzene	-	0.39	0.002 U	0.001 U					
Methyl acetate	-	16	0.02 U	0.01 U					
Methyl cyclohexane	-	-	0.002 U	0.001 U	0.00071 J				
Methyl tert butyl ether (MTBE)	-	0.012	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.002 U	0.001 U					
Styrene	0.1	1.1	0.002 U	0.001 U					
Tetrachloroethene	0.005	0.0097	0.002 U	0.001 U					
Toluene	1	0.86	0.00061 J	0.00067 J	0.00053 J	0.00044 J	0.00053 J	0.00047 J	0.0005 J
trans-1,2-Dichloroethene	0.1	0.086	0.002 U	0.001 U					
trans-1,3-Dichloropropene	-	-	0.002 U	0.001 U					
Trichloroethene	0.005	0.00044	0.002 U	0.001 U					
Trichlorofluoromethane (CFC-11)	-	1.1	0.002 U	0.001 U					
Trifluorotrichloroethane (Freon 113)	-	53	0.002 U	0.001 UJ					
Vinyl chloride	0.002	0.000015	0.065 J ^{ab}	0.028 ^{ab}	0.024 ^{ab}	0.012 ^{ab}	0.012 ^{ab}	0.012 ^{ab}	0.001 UJ
Xylenes (total)	10	0.19	0.004 U	0.002 U	0.00078 J				

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19	VAS-20								
Sample ID:	GW-38443-121608-DD-198	GW-38443-121608-DD-199	GW-38443-121608-DD-200	GW-38443-121608-DD-201	GW-38443-121608-DD-202	GW-38443-121608-DD-203	GW-38443-121608-DD-204	GW-38443-121608-DD-205	GW-38443-121608-DD-206	GW-38443-011109-KMV-229
Sample Date:	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	1/11/2009
Sample Depth:	62-67 ft BGS	67-72 ft BGS	72-77 ft BGS	77-82 ft BGS	82-87 ft BGS	87-92 ft BGS	92-97 ft BGS	92-97 ft BGS	92-97 ft BGS	22-27 ft BGS
USEPA Regional Screening Levels [1]										
Parameter	MCL <i>a</i>	Tap Water <i>b</i>								
<u>Semi-Volatiles</u>										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	-	-	-	-	-	-	0.001 UJ
2,4,5-Trichlorophenol	-	0.89	0.005 U	-	-	-	-	-	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	0.005 U	-	-	-	-	-	-	0.005 U
2,4-Dichlorophenol	-	0.035	0.002 U	-	-	-	-	-	-	0.002 U
2,4-Dimethylphenol	-	0.27	0.002 U	-	-	-	-	-	-	0.002 U
2,4-Dinitrophenol	-	0.03	0.005 U	-	-	-	-	-	-	0.005 U
2,4-Dinitrotoluene	-	0.0002	0.005 U	-	-	-	-	-	-	0.005 U
2,6-Dinitrotoluene	-	0.015	0.005 U	-	-	-	-	-	-	0.005 U
2-Chloronaphthalene	-	0.55	0.001 U	-	-	-	-	-	-	0.001 U
2-Chlorophenol	-	0.071	0.001 U	-	-	-	-	-	-	0.001 U
2-Methylnaphthalene	-	0.027	0.0002 U	-	-	-	-	-	-	0.0002 U
2-Methylphenol	-	0.72	0.001 U	-	-	-	-	-	-	0.001 U
2-Nitroaniline	-	0.15	0.002 U	-	-	-	-	-	-	0.002 UJ
2-Nitrophenol	-	-	0.002 U	-	-	-	-	-	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	-	-	-	-	-	-	0.005 U
3-Nitroaniline	-	-	0.002 U	-	-	-	-	-	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	-	-	-	-	-	-	0.005 U
4-Bromophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	0.002 U	-	-	-	-	-	-	0.002 U
4-Chloroaniline	-	0.00032	0.002 U	-	-	-	-	-	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	-	0.002 U
4-Methylphenol	-	1.4	0.001 U	-	-	-	-	-	-	0.001 U
4-Nitroaniline	-	0.0033	0.002 U	-	-	-	-	-	-	0.002 U
4-Nitrophenol	-	-	0.005 U	-	-	-	-	-	-	0.005 U
Acenaphthene	-	0.4	0.0002 U	-	-	-	-	-	-	0.0002 U
Acenaphthylene	-	-	0.0002 U	-	-	-	-	-	-	0.0002 U
Acetophenone	-	1.5	0.001 U	-	-	-	-	-	-	0.001 U
Anthracene	-	1.3	0.0002 U	-	-	-	-	-	-	0.0002 U
Atrazine	0.003	0.00026	0.001 U	-	-	-	-	-	-	0.001 U
Benzaldehyde	-	1.5	0.001 U	-	-	-	-	-	-	0.001 U
Benzo(a)anthracene	-	0.000029	0.0002 U	-	-	-	-	-	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	-	-	-	-	-	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	0.0002 U	-	-	-	-	-	-	0.0002 U
Benzo(g,h,i)perylene	-	-	0.0002 U	-	-	-	-	-	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	0.0002 U	-	-	-	-	-	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	-	-	-	-	-	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	-	-	-	-	-	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	-	-	-	-	-	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	-	-	-	-	-	-	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	-	-	-	-	-	-	0.001 U
Caprolactam	-	7.7	0.005 UJ	-	-	-	-	-	-	0.005 UJ
Carbazole	-	-	0.001 U	-	-	-	-	-	-	0.001 U
Chrysene	-	0.0029	0.0002 U	-	-	-	-	-	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	-	-	-	-	-	-	0.0002 U
Dibenzo-furan	-	0.0058	0.001 U	-	-	-	-	-	-	0.001 U
Diethyl phthalate	-	11	0.001 U	-	-	-	-	-	-	0.001 U
Dimethyl phthalate	-	-	0.001 U	-	-	-	-	-	-	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	-	-	-	-	-	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	-	-	-	-	-	-	0.001 U

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-19	VAS-20							
Sample ID:	GW-38443-121608-DD-198	GW-38443-121608-DD-199	GW-38443-121608-DD-200	GW-38443-121608-DD-201	GW-38443-121608-DD-202	GW-38443-121608-DD-203	GW-38443-121608-DD-204	GW-38443-121608-DD-205	GW-38443-011109-KMV-229
Sample Date:	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	12/16/2008	1/11/2009
Sample Depth:	62-67 ft BGS	67-72 ft BGS	72-77 ft BGS	77-82 ft BGS	82-87 ft BGS	87-92 ft BGS	92-97 ft BGS	92-97 ft BGS	22-27 ft BGS
<i>USEPA Regional Screening Levels [1]</i>									
Parameter	MCL <i>a</i>	Tap Water <i>b</i>							
Fluoranthene	-	0.63	0.0002 U	-	-	-	-	-	0.0002 U
Fluorene	-	0.22	0.0002 U	-	-	-	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	0.0002 U	-	-	-	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	0.001 U	-	-	-	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	-	-	-	-	-	0.01 U
Hexachloroethane	-	0.00079	0.001 U	-	-	-	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	-	-	-	-	-	0.0002 U
Isophorone	-	0.067	0.001 U	-	-	-	-	-	0.001 U
Naphthalene	-	0.00014	0.0002 U	-	-	-	-	-	0.0002 U
Nitrobenzene	-	0.00012	0.001 U	-	-	-	-	-	0.001 UJ
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	-	-	-	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	0.001 U	-	-	-	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	0.005 U	-	-	-	-	-	0.005 U
Phenanthrene	-	-	0.0002 U	-	-	-	-	-	0.0002 U
Phenol	-	4.5	0.001 U	-	-	-	-	-	0.001 U
Pyrene	-	0.087	0.0002 U	-	-	-	-	-	0.0002 U
Metals									
Arsenic	0.01	0.000045	0.022 ^{ab}	0.012 ^{ab}	0.015 ^{3ab}	0.037 ^{6ab}	0.029 ^{5ab}	0.021 ^{7ab}	0.022 ^{ab}
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	0.0044 J ^b	-	-
Lead	0.015	-	0.0465 ^a	0.0343 ^a	0.0317 ^a	0.0808 ^a	0.0682 ^a	0.0744 ^a	0.0661 ^a
Lead (dissolved)	0.015	-	-	-	-	-	0.001 U	-	0.0298 ^a

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-20		VAS-20		VAS-20		VAS-20		VAS-20		VAS-20	
Sample ID:	GW-38443-011109-KMV-230		GW-38443-011109-KMV-231		GW-38443-011109-KMV-232		GW-38443-011109-KMV-233		GW-38443-011109-KMV-234		GW-38443-011109-KMV-235	
Sample Date:	1/11/2009		1/11/2009		1/11/2009		1/11/2009		1/11/2009		1/11/2009	
Sample Depth:	27-32 ft BGS		32-37 ft BGS		37-42 ft BGS		37-42 ft BGS		42-47 ft BGS		47-52 ft BGS	
Parameter	USEPA Regional Screening Levels [1]		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate	
	MCL a	Tap Water b										
Volatiles												
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00078 J	0.00087 J	
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
Acetone	-	12	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	0.00045 J^b		0.001 U	0.001 U						
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Cyclohexane	-	13	0.00047 J	0.00049 J	0.00035 J	0.00035 J	0.00032 J	0.00032 J	0.00014 J	0.00029 J	0.00033 J	
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Ethylbenzene	0.7	0.0013	0.00039 J	0.00047 J	0.00032 J	0.00032 J	0.00032 J	0.0001 U	0.00026 J	0.00032 J		
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.00061 J	0.00068 J	0.00053 J	0.00053 J	0.00051 J	0.00051 J	0.00051 J	0.00051 J	0.00051 J	0.00051 J
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.									

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20
Sample ID:	GW-38443-011109-KMV-230	GW-38443-011109-KMV-231	GW-38443-011109-KMV-232	GW-38443-011109-KMV-233	GW-38443-011109-KMV-234	GW-38443-011109-KMV-235	GW-38443-011109-KMV-236	
Sample Date:	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	
Sample Depth:	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS	52-57 ft BGS	
Parameter	USEPA Regional Screening Levels [1]				Duplicate			
	MCL	Tap Water a						
		b						
Semi-Volatiles								
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	-	0.001 U	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	-	0.005 U	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	-	0.005 U	-	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	-	0.002 U	-	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	-	0.002 U	-	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	-	0.005 U	-	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	-	-	0.005 U	-	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	-	0.005 U	-	0.005 U
2-Chloronaphthalene	-	0.55	-	-	-	0.001 U	-	0.001 U
2-Chlorophenol	-	0.071	-	-	-	0.001 U	-	0.001 U
2-Methylnaphthalene	-	0.027	-	-	-	0.0002 U	-	0.0002 U
2-Methylphenol	-	0.72	-	-	-	0.001 U	-	0.001 U
2-Nitroaniline	-	0.15	-	-	-	0.002 U	-	0.002 U
2-Nitrophenol	-	-	-	-	-	0.002 U	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	-	0.005 U	-	0.005 U
3-Nitroaniline	-	-	-	-	-	0.002 U	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	-	0.005 U	-	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	-	0.002 U	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	-	0.002 U	-	0.002 U
4-Chloroaniline	-	0.00032	-	-	-	0.002 U	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	-	0.002 U	-	0.002 U
4-Methylphenol	-	1.4	-	-	-	0.001 U	-	0.001 U
4-Nitroaniline	-	0.0033	-	-	-	0.002 U	-	0.002 U
4-Nitrophenol	-	-	-	-	-	0.005 U	-	0.005 U
Acenaphthene	-	0.4	-	-	-	0.0002 U	-	0.0002 U
Acenaphthylene	-	-	-	-	-	0.0002 U	-	0.0002 U
Acetophenone	-	1.5	-	-	-	0.001 U	-	0.001 U
Anthracene	-	1.3	-	-	-	0.0002 U	-	0.0002 U
Atrazine	0.003	0.00026	-	-	-	0.001 U	-	0.001 U
Benzaldehyde	-	1.5	-	-	-	0.001 U	-	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	-	0.0002 U	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	-	-	0.0002 U	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	-	0.0002 U	-	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	-	0.0002 U	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	-	0.0002 U	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	-	0.001 U	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	-	0.001 U	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	-	0.001 U	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	-	0.0033	-	0.0079 ^{ab}
Butyl benzylphthalate (BBP)	-	0.014	-	-	-	0.001 U	-	0.001 U
Caprolactam	-	7.7	-	-	-	0.005 UJ	-	0.005 UJ
Carbazole	-	-	-	-	-	0.001 U	-	0.001 U
Chrysene	-	0.0029	-	-	-	0.0002 U	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	-	0.0002 U	-	0.0002 U
Dibenzofuran	-	0.0058	-	-	-	0.001 U	-	0.001 U
Diethyl phthalate	-	11	-	-	-	0.001 U	-	0.001 U
Dimethyl phthalate	-	-	-	-	-	0.001 U	-	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	-	-	-	0.001 U	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	-	0.001 U	-	0.001 U

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20	VAS-20
Sample ID:	GW-38443-011109-KMV-230	GW-38443-011109-KMV-231	GW-38443-011109-KMV-232	GW-38443-011109-KMV-233	GW-38443-011109-KMV-234	GW-38443-011109-KMV-235	GW-38443-011109-KMV-236	
Sample Date:	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	1/11/2009	
Sample Depth:	27-32 ft BGS	32-37 ft BGS	37-42 ft BGS	37-42 ft BGS	42-47 ft BGS	47-52 ft BGS	52-57 ft BGS	
	<i>USEPA Regional Screening Levels [1]</i>							
<i>Parameter</i>	<i>MCL</i>	<i>Tap Water</i>						
	<i>a</i>	<i>b</i>						
Fluoranthene	-	0.63	-	-	-	0.0002 U	-	0.0002 U
Fluorene	-	0.22	-	-	-	0.0002 U	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	-	0.0002 U	-	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	-	0.001 U	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	-	0.01 U	-	0.01 U
Hexachloroethane	-	0.00079	-	-	-	0.001 U	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	-	0.0002 U	-	0.0002 U
Isophorone	-	0.067	-	-	-	0.001 U	-	0.001 U
Naphthalene	-	0.00014	-	-	-	0.0002 U	-	0.0002 U
Nitrobenzene	-	0.00012	-	-	-	0.001 U	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	-	0.001 U	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	-	0.001 U	-	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	-	0.005 U	-	0.005 U
Phenanthrene	-	-	-	-	-	0.0002 U	-	0.0002 U
Phenol	-	4.5	-	-	-	0.001 U	-	0.001 U
Pyrene	-	0.087	-	-	-	0.0002 U	-	0.0002 U
<i>Metals</i>								
Arsenic	0.01	0.000045	0.129 ^{ab}	0.0608 ^{ab}	0.0463 ^{ab}	0.0313 ^{ab}	0.0086 ^b	0.0868 ^{ab}
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-
Lead	0.015	-	0.0989 ^a	0.0461 ^a	0.0456 ^a	0.0302 ^a	0.0067	0.0866 ^a
Lead (dissolved)	0.015	-	-	-	-	-	-	0.0224 ^a

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORaine, OHIO

Sample Location:	VAS-22		VAS-22		VAS-22		VAS-22		VAS-22	
Sample ID:	GW-38443-121808-DD-205		GW-38443-121808-DD-206		GW-38443-121808-DD-207		GW-38443-121808-DD-208		GW-38443-121808-DD-209	
Sample Date:	12/18/2008		12/18/2008		12/18/2008		12/18/2008		12/18/2008	
Sample Depth:	27-32 ft BGS		27-32 ft BGS		32-37 ft BGS		42-47 ft BGS		47-52 ft BGS	
Parameter	USEPA Regional Screening Levels [1]						Duplicate			
	MCL a	TapWater b								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U						
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 UJ	0.001 U	0.001 U				
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 UJ	0.001 U	0.001 U				
1,1-Dichloroethane	-	0.0024	0.001	0.00094 J	0.0011	0.00037 J	0.0005 J	0.00045 J		
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U						
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U						
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U						
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U						
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U						
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U						
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U						
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U						
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U						
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U						
2-Hexanone	-	0.034	0.01 U	0.01 U						
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U						
Acetone	-	12	0.01 U	0.01 U						
Benzene	0.005	0.00039	0.001 U	0.001 U						
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U						
Bromoform	0.08	0.0079	0.001 U	0.001 U						
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U						
Carbon disulfide	-	0.72	0.001 U	0.001 U						
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U						
Chlorobenzene	0.1	0.072	0.001 U	0.001 U						
Chloroethane	-	21	0.001 U	0.001 U						
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U						
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U						
cis-1,2-Dichloroethene	0.07	0.028	0.0006 J	0.00053 J	0.00058 J	0.00087 J				
cis-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ						
Cyclohexane	-	13	0.00014 J	0.00018 J	0.00021 J	0.0002 J				
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U						
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 U	0.001 U						
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U						
Isopropyl benzene	-	0.39	0.001 U	0.001 U						
Methyl acetate	-	16	0.01 U	0.01 U						
Methyl cyclohexane	-	-	0.001 U	0.001 U						
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U						
Methylene chloride	0.005	0.0099	0.001 U	0.001 U						
Styrene	0.1	1.1	0.001 U	0.001 U						
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U						
Toluene	1	0.86	0.0038	0.0032	0.0062	0.0022	0.001	0.0014		
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U						
trans-1,3-Dichloropropene	-	-	0.001 U	0.001 U						
Trichloroethene	0.005	0.00044	0.001 U	0.001 U						
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 U						
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U	0.001 U						
Vinyl chloride	0.002	0.000015	0.00066 J ^b	0.00058 J ^b	0.00075 J ^b	0.00035 J ^b	0.00064 J ^b	0.00071 J ^b		
Xylenes (total)	10	0.19	0.002 U							

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	VAS-22		VAS-22		VAS-22		VAS-22		VAS-22	
Sample ID:	GW-38443-121808-DD-205		GW-38443-121808-DD-206		GW-38443-121808-DD-207		GW-38443-121808-DD-208		GW-38443-121808-DD-209	
Sample Date:	12/18/2008		12/18/2008		12/18/2008		12/18/2008		12/18/2008	
Sample Depth:	27-32 ft BGS		27-32 ft BGS		32-37 ft BGS		42-47 ft BGS		47-52 ft BGS	
Parameter	USEPA Regional Screening Levels [1]						Duplicate			
	MCL a	TapWater b								
<u>Semi-Volatiles</u>										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
2-Chlorophenol	-	0.071	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
2-Methylphenol	-	0.72	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
2-Nitroaniline	-	0.15	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
2-Nitrophenol	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
3-Nitroaniline	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4-Chloroaniline	-	0.00032	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4-Methylphenol	-	1.4	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
4-Nitroaniline	-	0.00033	0.002 U	0.002 U	0.002 U	-	-	-	-	0.002 U
4-Nitrophenol	-	-	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
Acenaphthene	-	0.4	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Acenaphthylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Acetophenone	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Anthracene	-	1.3	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Atrazine	0.003	0.00026	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Benzaldehyde	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	0.002 U	0.002 U	0.002 U	-	-	-	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Caprolactam	-	7.7	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
Carbazole	-	-	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Chrysene	-	0.0029	0.0002 U	0.0002 U	0.0002 U	0.0002 U	-	-	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	0.0002 U	0.0002 U	-	-	-	0.0002 U
Dibenzofuran	-	0.0058	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Diethyl phthalate	-	11	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Dimethyl phthalate	-	-	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	0.001 U

TABLE A-1
HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORaine, OHIO

Sample Location:	VAS-22		VAS-22		VAS-22		VAS-22		VAS-22	
Sample ID:	GW-38443-121808-DD-205		GW-38443-121808-DD-206		GW-38443-121808-DD-207		GW-38443-121808-DD-208		GW-38443-121808-DD-209	
Sample Date:	12/18/2008		12/18/2008		12/18/2008		12/18/2008		12/18/2008	
Sample Depth:	27-32 ft BGS		27-32 ft BGS		32-37 ft BGS		42-47 ft BGS		47-52 ft BGS	
<i>USEPA Regional Screening Levels [1]</i>						<i>Duplicate</i>				
Parameter	MCL <i>a</i>	TapWater <i>b</i>								
Fluoranthene	-	0.63	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Fluorene	-	0.22	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	0.01 U	0.01 U	-	-	-	-	0.01 U
Hexachloroethane	-	0.00079	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Isophorone	-	0.067	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Naphthalene	-	0.00014	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Nitrobenzene	-	0.00012	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.000093	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U
Phenanthrene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
Phenol	-	4.5	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U
Pyrene	-	0.087	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	0.0002 U
<i>Metals</i>										
Arsenic	0.01	0.000045	0.127 ^{ab}	0.132 ^{ab}	0.0714 ^{ab}	0.174 ^{ab}	0.147 ^{ab}	0.0495 ^{ab}		
Arsenic (dissolved)	0.01	0.000045	-	-	-	0.0063 ^b	-	-	-	
Lead	0.015	-	0.309 ^a	0.325 ^a	0.183 ^a	0.451 ^a	0.342 ^a	0.11 ^a		
Lead (dissolved)	0.015	-	-	-	-	0.001 U	-	-	-	

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209										
Sample ID:	MW209	GW-38443-091108-NZ-013									
Sample Date:	2/22/1999	11/11/1999	5/9/2000	6/6/2001	6/14/2002	7/2/2004	10/14/2004	8/3/2005	9/11/2008		
Sample Depth:	694.48-686.48 ft AMSL										
<i>USEPA Regional Screening Levels [1]</i>											
Parameter	MCL a	Tap Water b									
Volatiles											
1,1,1-Trichloroethane	0.2	7.5	U	U	U	U	U	U	U	U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	U	U	U	U	U	U	U	U	0.001 UJ
1,1,2-Trichloroethane	0.005	0.00024	-	-	-	-	-	-	-	-	0.001 U
1,1-Dichloroethane	-	0.0024	U	U	U	U	U	U	U	U	0.001 U
1,1-Dichloroethene	0.007	0.26	-	-	-	-	-	-	-	-	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	-	-	-	-	-	-	-	-	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.0000032	-	-	-	-	-	-	-	-	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	-	-	-	-	-	-	-	-	0.001 U
1,2-Dichlorobenzene	0.6	0.28	-	-	-	-	-	-	-	-	0.001 U
1,2-Dichloroethane	0.005	0.00015	U	U	U	U	U	U	U	U	0.001 U
1,2-Dichloroethene (total)	-	0.13	U	U	U	U	U	U	U	U	-
1,2-Dichloropropane	0.005	0.00038	-	-	-	-	-	-	-	-	0.001 U
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	-	-	-	-	-	-	-	-	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	-	-	-	-	-	-	-	-	0.01 U
2-Hexanone	-	0.034	-	-	-	-	-	-	-	-	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	-	-	-	-	-	-	-	-	0.01 U
Acetone	-	12	U	U	U	U	U	U	U	U	0.01 U
Benzene	0.005	0.00039	U	U	U	U	U	U	U	U	0.001 U
Bromodichloromethane	0.08	0.00012	-	-	-	-	-	-	-	-	0.001 U
Bromoform	0.08	0.0079	U	U	U	U	U	U	U	U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	-	-	-	-	-	-	-	-	0.001 U
Carbon disulfide	-	0.72	-	-	-	-	-	-	-	-	0.001 U
Carbon tetrachloride	0.005	0.00039	-	-	-	-	-	-	-	-	0.001 U
Chlorobenzene	0.1	0.072	U	U	U	U	U	U	U	U	0.001 U
Chloroethane	-	21	U	U	U	U	U	U	U	U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	-	-	-	-	-	-	-	-	0.001 U
Chloromethane (Methyl chloride)	-	0.19	-	-	-	-	-	-	-	-	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	-	-	-	-	-	-	-	-	0.001 U
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	0.001 U
Cyclohexane	-	13	-	-	-	-	-	-	-	-	0.001 U
Dibromochloromethane	0.08	0.00015	-	-	-	-	-	-	-	-	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	-	-	-	-	-	-	-	-	0.001 U
Ethylbenzene	0.7	0.0013	-	-	-	-	-	-	-	-	0.001 U
Isopropyl benzene	-	0.39	-	-	-	-	-	-	-	-	0.001 U
Methyl acetate	-	16	-	-	-	-	-	-	-	-	0.01 U
Methyl cyclohexane	-	-	-	-	-	-	-	-	-	-	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	-	-	-	-	-	-	-	-	0.005 U
Methylene chloride	0.005	0.0099	0.008 B ^a	0.051 B ^{ab}	-	U	U	U	U	U	0.001 U
Styrene	0.1	1.1	U	U	U	U	U	U	U	U	0.001 UJ
Tetrachloroethene	0.005	0.0097	U	U	U	U	U	U	U	U	0.001 U
Toluene	1	0.86	0.007	U	U	U	U	U	U	U	0.001 U
trans-1,2-Dichloroethene	0.1	0.086	-	-	-	-	-	-	-	-	0.001 U
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	0.001 U
Trichloroethene	0.005	0.00044	U	U	U	U	U	U	U	U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	-	-	-	-	-	-	-	-	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	-	-	-	-	-	-	-	-	0.001 U
Vinyl chloride	0.002	0.000015	U	U	U	U	U	U	U	U	0.00031 J ^b

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209									
Sample ID:	MW209	GW-38443-091108-NZ-013								
Sample Date:	2/22/1999	11/11/1999	5/9/2000	6/6/2001	6/14/2002	7/2/2004	10/14/2004	8/3/2005	9/11/2008	
Sample Depth:	694.48-686.48 ft AMSL									
<i>USEPA Regional Screening Levels [1]</i>										
Parameter	MCL <i>a</i>	Tap Water <i>b</i>								
Xylenes (total)	10	0.19	U	U	U	U	U	U	U	0.002 U
<u>Semi-Volatiles</u>										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	-	-	-	-	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	-	-	-	-	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	-	-	-	-	-	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	-	-	-	-	-	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	-	-	-	-	-	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	-	-	-	-	-	0.005 UJ
2,4-Dinitrotoluene	-	0.0002	-	-	-	-	-	-	-	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	-	-	-	-	-	0.005 U
2-Chloronaphthalene	-	0.55	-	-	-	-	-	-	-	0.001 U
2-Chlorophenol	-	0.071	-	-	-	-	-	-	-	0.001 U
2-Methylnaphthalene	-	0.027	-	-	-	-	-	-	-	0.0002 U
2-Methylphenol	-	0.72	-	-	-	-	-	-	-	0.001 U
2-Nitroaniline	-	0.15	-	-	-	-	-	-	-	0.002 U
2-Nitrophenol	-	-	-	-	-	-	-	-	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	-	-	-	-	-	0.005 U
3-Nitroaniline	-	-	-	-	-	-	-	-	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	-	-	-	-	-	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	-	-	-	-	-	0.002 U
4-Chloroaniline	-	0.00032	-	-	-	-	-	-	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	0.002 U
4-Methylphenol	-	1.4	-	-	-	-	-	-	-	0.001 U
4-Nitroaniline	-	0.0033	-	-	-	-	-	-	-	0.002 U
4-Nitrophenol	-	-	-	-	-	-	-	-	-	0.005 U
Acenaphthene	-	0.4	-	-	-	-	-	-	-	0.0002 U
Acenaphthylene	-	-	-	-	-	-	-	-	-	0.0002 U
Acetophenone	-	1.5	-	-	-	-	-	-	-	0.001 U
Anthracene	-	1.3	-	-	-	-	-	-	-	0.0002 U
Atrazine	0.003	0.00026	-	-	-	-	-	-	-	0.001 U
Benzaldehyde	-	1.5	-	-	-	-	-	-	-	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	-	-	-	-	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	-	-	-	-	-	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	-	-	-	-	-	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	-	-	-	-	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	-	-	-	-	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	-	-	-	-	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	-	-	-	-	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	-	-	-	-	-	0.0028 U
Butyl benzylphthalate (BBP)	-	0.014	-	-	-	-	-	-	-	0.001 U
Caprolactam	-	7.7	-	-	-	-	-	-	-	0.0037 J
Carbazole	-	-	-	-	-	-	-	-	-	0.001 U
Chrysene	-	0.0029	-	-	-	-	-	-	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	-	-	-	-	-	0.0002 U
Dibenzofuran	-	0.0058	-	-	-	-	-	-	-	0.001 U
Diethyl phthalate	-	11	-	-	-	-	-	-	-	0.001 U
Dimethyl phthalate	-	-	-	-	-	-	-	-	-	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209									
Sample ID:	MW209	GW-38443-091108-NZ-013								
Sample Date:	2/22/1999	11/11/1999	5/9/2000	6/6/2001	6/14/2002	7/2/2004	10/14/2004	8/3/2005	9/11/2008	
Sample Depth:	694.48-686.48 ft AMSL									
USEPA Regional Screening Levels [1]										
Parameter	MCL a	TapWater b								
Di-n-butylphthalate (DBP)	-	0.67	-	-	-	-	-	-	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	-	-	-	-	-	0.001 U
Fluoranthene	-	0.63	-	-	-	-	-	-	-	0.0002 U
Fluorene	-	0.22	-	-	-	-	-	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	-	-	-	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	-	-	-	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	-	-	-	-	-	R
Hexachloroethane	-	0.00079	-	-	-	-	-	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	-	-	-	-	-	0.0002 U
Isophorone	-	0.067	-	-	-	-	-	-	-	0.001 U
Naphthalene	-	0.00014	-	-	-	-	-	-	-	0.0002 U
Nitrobenzene	-	0.00012	-	-	-	-	-	-	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	-	-	-	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	-	-	-	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	-	-	-	-	-	0.005 U
Phenanthrene	-	-	-	-	-	-	-	-	-	0.0002 U
Phenol	-	4.5	-	-	-	-	-	-	-	0.001 U
Pyrene	-	0.087	-	-	-	-	-	-	-	0.0002 U
Metals										
Aluminum	-	16	-	-	-	-	-	-	-	0.162 J
Aluminum (dissolved)	-	16	-	-	-	-	-	-	-	-
Antimony	0.006	0.006	-	-	-	-	-	-	-	0.002 U
Antimony (dissolved)	0.006	0.006	-	-	-	-	-	-	-	-
Arsenic	0.01	0.000045	0.032 ^{ab}	-	-	-	-	-	-	0.0042 J ^b
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-	-
Barium	2	2.9	0.63	-	-	-	-	-	-	0.163 J
Barium (dissolved)	2	2.9	-	-	-	-	-	-	-	-
Beryllium	0.004	0.016	-	-	-	-	-	-	-	0.005 U
Beryllium (dissolved)	0.004	0.016	-	-	-	-	-	-	-	-
Cadmium	0.005	0.0069	U	-	-	-	-	-	-	0.001 U
Cadmium (dissolved)	0.005	0.0069	-	-	-	-	-	-	-	-
Calcium	-	-	-	-	-	-	-	-	-	77
Calcium (dissolved)	-	-	-	-	-	-	-	-	-	-
Chromium	0.1	-	0.065	-	-	-	-	-	-	0.01 U
Chromium (dissolved)	0.1	-	-	-	-	-	-	-	-	-
Cobalt	-	0.0047	-	-	-	-	-	-	-	0.05 U
Cobalt (dissolved)	-	0.0047	-	-	-	-	-	-	-	-
Copper	1.3	0.62	-	-	-	-	-	-	-	0.025 U
Copper (dissolved)	1.3	0.62	-	-	-	-	-	-	-	-
Iron	-	11	-	-	-	-	-	-	-	1.76
Iron (dissolved)	-	11	3	-	-	-	-	-	-	-
Lead	0.015	-	0.1 ^a	-	-	-	-	-	-	0.0004 J
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	-	32.4
Magnesium (dissolved)	-	-	-	-	-	-	-	-	-	-
Manganese	-	0.32	-	-	-	-	-	-	-	0.213
Manganese (dissolved)	-	0.32	-	-	-	-	-	-	-	-
Manganese 2+	-	-	-	-	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209									
Sample ID:	MW209	GW-38443-091108-NZ-013								
Sample Date:	2/22/1999	11/11/1999	5/9/2000	6/6/2001	6/14/2002	7/2/2004	10/14/2004	8/3/2005	9/11/2008	
Sample Depth:	694.48-686.48 ft AMSL									
<i>USEPA Regional Screening Levels [1]</i>										
Parameter	MCL <i>a</i>	Tap Water <i>b</i>								
Mercury	0.002	0.00063	-	-	-	-	-	-	-	0.0002 U
Mercury (dissolved)	0.002	0.00063	-	-	-	-	-	-	-	-
Nickel	-	0.3	-	-	-	-	-	-	-	0.04 U
Nickel (dissolved)	-	0.3	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	9.99
Potassium (dissolved)	-	-	-	-	-	-	-	-	-	-
Selenium	0.05	0.078	-	-	-	-	-	-	-	0.005 U
Selenium (dissolved)	0.05	0.078	-	-	-	-	-	-	-	-
Silver	-	0.071	-	-	-	-	-	-	-	0.001 U
Silver (dissolved)	-	0.071	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-	40.6
Sodium (dissolved)	-	-	-	-	-	-	-	-	-	-
Thallium	0.002	0.00016	-	-	-	-	-	-	-	0.001 U
Thallium (dissolved)	0.002	0.00016	-	-	-	-	-	-	-	-
Vanadium	-	0.078	-	-	-	-	-	-	-	0.05 U
Vanadium (dissolved)	-	0.078	-	-	-	-	-	-	-	-
Zinc	-	4.7	-	-	-	-	-	-	-	0.02 U
Zinc (dissolved)	-	4.7	-	-	-	-	-	-	-	-
<i>PCBs</i>										
Aroclor-1016 (PCB-1016)	-	0.00096	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1221 (PCB-1221)	-	0.00004	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1232 (PCB-1232)	-	0.00004	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1242 (PCB-1242)	-	0.000034	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1248 (PCB-1248)	-	0.000034	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1254 (PCB-1254)	-	0.000034	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1260 (PCB-1260)	-	0.000034	-	-	-	-	-	-	-	0.0002 UJ
<i>Pesticides</i>										
4,4'-DDD	-	0.000027	-	-	-	-	-	-	-	0.00005 U
4,4'-DDE	-	0.0002	-	-	-	-	-	-	-	0.00005 U
4,4'-DDT	-	0.0002	-	-	-	-	-	-	-	0.00005 U
Aldrin	-	0.00004	-	-	-	-	-	-	-	0.00005 U
alpha-BHC	-	0.0000062	-	-	-	-	-	-	-	0.00005 U
alpha-Chlordane	-	-	-	-	-	-	-	-	-	0.00005 U
beta-BHC	-	0.000022	-	-	-	-	-	-	-	0.00005 U
delta-BHC	-	-	-	-	-	-	-	-	-	0.00005 U
Dieldrin	-	0.0000015	-	-	-	-	-	-	-	0.00005 U
Endosulfan I	-	-	-	-	-	-	-	-	-	0.00005 U
Endosulfan II	-	-	-	-	-	-	-	-	-	0.00005 U
Endosulfan sulfate	-	-	-	-	-	-	-	-	-	0.00005 U
Endrin	0.002	0.0017	-	-	-	-	-	-	-	0.00005 U
Endrin aldehyde	-	-	-	-	-	-	-	-	-	0.00005 U
Endrin ketone	-	-	-	-	-	-	-	-	-	0.00005 U
gamma-BHC (lindane)	0.0002	0.000036	-	-	-	-	-	-	-	0.00005 U
gamma-Chlordane	-	-	-	-	-	-	-	-	-	0.00005 U
Heptachlor	0.0004	0.0000018	-	-	-	-	-	-	-	0.00005 U
Heptachlor epoxide	0.0002	0.0000033	-	-	-	-	-	-	-	0.00005 U
Methoxychlor	0.04	0.027	-	-	-	-	-	-	-	0.0001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209										
Sample ID:	MW209	GW-38443-091108-NZ-013									
Sample Date:	2/22/1999	11/11/1999	5/9/2000	6/6/2001	6/14/2002	7/2/2004	10/14/2004	8/3/2005	9/11/2008		
Sample Depth:	694.48-686.48 ft AMSL										
<i>USEPA Regional Screening Levels [1]</i>											
Parameter	MCL <i>a</i>	Tap Water <i>b</i>									
Toxaphene	0.003	0.000013	-	-	-	-	-	-	-	-	0.002 U
<i><u>Herbicides</u></i>											
2,4,5-TP (Silvex)	0.05	0.084	-	-	-	-	-	-	-	-	0.001 U
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	-	-	-	-	-	-	-	-	0.004 U
<i><u>Gases</u></i>											
Ethane	-	-	0.004	-	-	-	-	-	-	-	-
Ethene	-	-	U	-	-	-	-	-	-	-	-
Methane	-	-	0.28 E/0.59 D	-	-	-	-	-	-	-	-
<i><u>General Chemistry</u></i>											
Alkalinity, total (as CaCO ₃)	-	-	340	-	-	-	-	-	-	-	-
Ammonia-N	-	-	1	-	-	-	-	-	-	-	-
Chloride	-	-	39.1	-	-	-	-	-	-	-	-
Cyanide (total)	0.2	0.0014	-	-	-	-	-	-	-	-	-
Dissolved organic carbon (DOC)	-	-	-	-	-	-	-	-	-	-	-
Hardness	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	10	25	U	-	-	-	-	-	-	-	-
Nitrite (as N)	1	1.6	-	-	-	-	-	-	-	-	-
Sulfate	-	-	78	-	-	-	-	-	-	-	-
Sulfide (acid soluble)	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	-	-	4	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

a - value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This tag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209		MW-209A		MW-209A		MW-212									
Sample ID:	GW-38443-072109-GL-003		GW-38443-072209-GL-004		GW-38443-010510-DR-007		MW212									
Sample Date:	7/21/2009		7/22/2009		1/5/2010		2/18/1999		11/11/1999		5/10/2000		6/6/2001		6/14/2002	
Sample Depth:	694.48-686.48 ft AMSL		660.34-655.34 ft AMSL		660.34-655.34 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL	
USEPA Regional Screening Levels [1]																
Parameter	MCL	Tap Water	a	b												
Volatiles																
1,1,1-Trichloroethane	0.2	7.5	0.001 U		0.001 U		0.001 U		U		U		U		U	
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 UJ		0.001 UJ		0.001 UJ		U		U		U		U	
1,1,2-Trichloroethane	0.005	0.00024	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,1-Dichloroethane	-	0.0024	0.001 U		0.001 U		0.001 U		U		U		U		U	
1,1-Dichloroethene	0.007	0.26	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 UJ		0.001 UJ		0.001 U		-		-		-		-	
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.0000032	0.002 U		0.002 U		0.002 UJ		-		-		-		-	
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,2-Dichlorobenzene	0.6	0.28	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,2-Dichloroethane	0.005	0.00015	0.001 U		0.001 U		0.001 U		U		U		U		U	
1,2-Dichloroethene (total)	-	0.13	-		-		-		U		U		U		U	
1,2-Dichloropropane	0.005	0.00038	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,3-Dichlorobenzene	-	-	0.001 U		0.001 U		0.001 U		-		-		-		-	
1,4-Dichlorobenzene	0.075	0.00042	0.001 U		0.001 U		0.001 U		-		-		-		-	
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U		0.01 U		0.01 U		-		-		-		-	
2-Hexanone	-	0.034	0.01 U		0.01 U		0.01 U		-		-		-		-	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U		0.01 U		0.01 U		-		-		-		-	
Acetone	-	12	0.01 U		0.01 U		0.01 U		U		U		U		U	
Benzene	0.005	0.00039	0.001 U		0.001 U		0.001 U		U		U		U		U	
Bromodichloromethane	0.08	0.00012	0.001 U		0.001 U		0.001 UJ		-		-		-		-	
Bromoform	0.08	0.0079	0.001 U		0.001 U		0.001 U		U		U		U		U	
Bromomethane (Methyl bromide)	-	0.007	0.001 U		0.001 U		0.001 U		-		-		-		-	
Carbon disulfide	-	0.72	0.001 UJ		0.001 UJ		0.001 U		-		-		-		-	
Carbon tetrachloride	0.005	0.00039	0.001 U		0.001 U		0.001 U		-		-		-		-	
Chlorobenzene	0.1	0.072	0.001 U		0.001 U		0.001 U		U		U		U		U	
Chloroethane	-	21	0.001 U		0.001 U		0.001 U		U		U		U		U	
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U		0.001 U		0.001 U		-		-		-		-	
Chloromethane (Methyl chloride)	-	0.19	0.001 U		0.001 U		0.001 U		-		-		-		-	
cis-1,2-Dichloroethene	0.07	0.028	0.001 U		0.0011		0.001 U		-		-		-		-	
cis-1,3-Dichloropropene	-	-	0.001 UJ		0.001 UJ		0.001 UJ		-		-		-		-	
Cyclohexane	-	13	0.001 UJ		0.001 UJ		0.001 U		-		-		-		-	
Dibromochloromethane	0.08	0.00015	0.001 U		0.001 U		0.001 UJ		-		-		-		-	
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 UJ		0.001 UJ		0.001 UJ		-		-		-		-	
Ethylbenzene	0.7	0.0013	0.001 U		0.001 U		0.001 U		-		-		-		-	
Isopropyl benzene	-	0.39	0.001 U		0.001 U		0.001 U		-		-		-		-	
Methyl acetate	-	16	0.01 U		0.01 U		0.01 U		-		-		-		-	
Methyl cyclohexane	-	-	0.001 UJ		0.001 UJ		0.001 U		-		-		-		-	
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U		0.005 U		0.005 U		-		-		-		-	
Methylene chloride	0.005	0.0099	0.001 U		0.001 U		0.001 U		U		0.0054 B ^a		U		U	
Styrene	0.1	1.1	0.001 U		0.001 U		0.001 U		U		U		U		U	
Tetrachloroethene	0.005	0.0097	0.001 U		0.001 U		0.001 U		U		U		U		U	
Toluene	1	0.86	0.001 U		0.001 U		0.001 U		0.002 J		0.0058		0.0066		U	
trans-1,2-Dichloroethene	0.1	0.086	0.001 U		0.001 U		0.001 U		-		-		-		-	
trans-1,3-Dichloropropene	-	-	0.001 UJ		0.001 UJ		0.001 UJ		-		-		-		-	
Trichloroethene	0.005	0.00044	0.001 U		0.001 U		0.001 U		U		U		U		U	
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U		0.001 U		0.001 U		-		-		-		-	
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U													

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209	MW-209A	MW-209A	MW-212						
Sample ID:	GW-38443-072109-GL-003	GW-38443-072209-GL-004	GW-38443-010510-DR-007	MW212						
Sample Date:	7/21/2009	7/22/2009	1/5/2010	2/18/1999	11/11/1999	5/10/2000	6/6/2001	6/14/2002	6/14/2002	7/2/2004
Sample Depth:	694.48-686.48 ft AMSL	660.34-655.34 ft AMSL	660.34-655.34 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL
<i>USEPA Regional Screening Levels [1]</i>										
Parameter	MCL <i>a</i>	Tap Water <i>b</i>								
Xylenes (total)	10	0.19	0.002 U	0.002 U	0.002 U	U	U	U	U	U
<u>Semi-Volatiles</u>										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	0.001 U	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	0.005 U	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	0.005 U	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	0.002 U	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	0.002 U	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	0.005 U	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	0.005 U	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	0.005 U	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	0.001 U	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	0.001 U	0.001 U	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 U	0.001 U	0.001 U	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	0.002 U	0.002 U	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	0.005 U	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	0.005 U	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4-Chloraniline	-	0.00032	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	0.001 U	0.001 U	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	0.002 U	0.002 U	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	0.005 U	0.005 U	-	-	-	-	-
Acenaphthene	-	0.4	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Anthracene	-	1.3	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	0.001 U	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	0.001 U	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	0.001 U	0.001 U	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	0.002 U	0.002 U	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Caprolactam	-	7.7	0.005 U	0.005 U	0.005 U	-	-	-	-	-
Carbazole	-	-	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Chrysene	-	0.0029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-
Dibenzofuran	-	0.0058	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	0.001 U	0.001 U	-	-	-	-	-
Dimethyl phthalate	-	-	0.001 U	0.001 U	0.001 U	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209		MW-209A		MW-209A		MW-212		MW-212		MW-212		MW-212	
Sample ID:	GW-38443-072109-GL-003		GW-38443-072209-GL-004		GW-38443-010510-DR-007		MW212		MW212		MW212		MW212	
Sample Date:	7/21/2009		7/22/2009		1/5/2010		2/18/1999		11/11/1999		5/10/2000		6/6/2001	
Sample Depth:	694.48-686.48 ft AMSL		660.34-655.34 ft AMSL		660.34-655.34 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL		680.31-670.31 ft AMSL	
<i>USEPA Regional Screening Levels [1]</i>														
Parameter	MCL	Tap Water a	Water b											
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Fluoranthene	-	0.63	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-	-	-	-
Phenanthrene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-
Pyrene	-	0.087	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-	-	-	-
Metals														
Aluminum	-	16	0.152 J	0.2 U	0.2 U	-	-	-	-	-	-	-	-	-
Aluminum (dissolved)	-	16	0.2 U	0.2 U	-	-	-	-	-	-	-	-	-	-
Antimony	0.006	0.006	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-	-	-	-
Antimony (dissolved)	0.006	0.006	0.002 U	0.002 U	-	-	-	-	-	-	-	-	-	-
Arsenic	0.01	0.000045	0.0044 J ^b	0.0031 J ^b	0.0033 J ^b	U	-	-	-	-	-	-	-	-
Arsenic (dissolved)	0.01	0.000045	0.004 J ^b	0.003 J ^b	-	-	-	-	-	-	-	-	-	-
Barium	2	2.9	0.136 J	0.321	0.348	U	-	-	-	-	-	-	-	-
Barium (dissolved)	2	2.9	0.134 J	0.313	-	-	-	-	-	-	-	-	-	-
Beryllium	0.004	0.016	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-	-	-	-
Beryllium (dissolved)	0.004	0.016	0.005 U	0.005 U	-	-	-	-	-	-	-	-	-	-
Cadmium	0.005	0.0069	0.001 U	0.001 U	0.001 U	U	-	-	-	-	-	-	-	-
Cadmium (dissolved)	0.005	0.0069	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-	-
Calcium	-	-	69.5	69	76.5	-	-	-	-	-	-	-	-	-
Calcium (dissolved)	-	-	68.8	67	-	-	-	-	-	-	-	-	-	-
Chromium	0.1	-	0.01 U	0.01 U	0.01 U	0.013	-	-	-	-	-	-	-	-
Chromium (dissolved)	0.1	-	0.01 U	0.01 U	-	-	-	-	-	-	-	-	-	-
Cobalt	-	0.0047	0.05 U	0.05 U	0.05 U	-	-	-	-	-	-	-	-	-
Cobalt (dissolved)	-	0.0047	0.05 U	0.05 U	-	-	-	-	-	-	-	-	-	-
Copper	1.3	0.62	0.025 U	0.025 U	0.025 U	-	-	-	-	-	-	-	-	-
Copper (dissolved)	1.3	0.62	0.025 U	0.025 U	-	-	-	-	-	-	-	-	-	-
Iron	-	11	1.81	1.35	1.4	-	-	-	-	-	-	-	-	-
Iron (dissolved)	-	11	1.36	1.25	-	1.2	-	-	-	-	-	-	-	-
Lead	0.015	-	0.00044 J	0.001 U	0.00024 J	U	-	-	-	-	-	-	-	-
Lead (dissolved)	0.015	-	0.001 U	0.001 U	-	-	-	-	-	-	-	-	-	-
Magnesium	-	-	28.5	56.9	61.6	-	-	-	-	-	-	-	-	-
Magnesium (dissolved)	-	-	28.5	55.4	-	-	-	-	-	-	-	-	-	-
Manganese	-	0.32	0.179	0.176	0.208	-	-	-	-	-	-	-	-	-
Manganese (dissolved)	-	0.32	0.175	0.171	-	-	-	-	-	-	-	-	-	-
Manganese 2+	-	-	0.260	0.566	0.359	-	-	-	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209	MW-209A	MW-209A	MW-212	MW-212	MW-212	MW-212	MW-212	MW-212
Sample ID:	GW-38443-072109-GL-003	GW-38443-072209-GL-004	GW-38443-010510-DR-007	MW212	MW212	MW212	MW212	MW212	MW212
Sample Date:	7/21/2009	7/22/2009	1/5/2010	2/18/1999	11/11/1999	5/10/2000	6/6/2001	6/14/2002	7/2/2004
Sample Depth:	694.48-686.48 ft AMSL	660.34-655.34 ft AMSL	660.34-655.34 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL
USEPA Regional Screening Levels [1]									
Parameter	MCL	Tap Water							
	<i>a</i>	<i>b</i>							
Mercury	0.002	0.00063	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Mercury (dissolved)	0.002	0.00063	0.0002 U	0.0002 U	-	-	-	-	-
Nickel	-	0.3	0.04 U	0.04 U	0.04 U	-	-	-	-
Nickel (dissolved)	-	0.3	0.04 U	0.04 U	-	-	-	-	-
Potassium	-	-	7.68	21.1	21.2	-	-	-	-
Potassium (dissolved)	-	-	7.78	20.6	-	-	-	-	-
Selenium	0.05	0.078	0.005 U	0.005 U	0.005 U	-	-	-	-
Selenium (dissolved)	0.05	0.078	0.005 U	0.005 U	-	-	-	-	-
Silver	-	0.071	0.001 U	0.001 U	0.001 U	-	-	-	-
Silver (dissolved)	-	0.071	0.001 U	0.001 U	-	-	-	-	-
Sodium	-	-	43.1	46.8	37.4	-	-	-	-
Sodium (dissolved)	-	-	43.8	45.8	-	-	-	-	-
Thallium	0.002	0.00016	0.001 U	0.001 U	0.001 U	-	-	-	-
Thallium (dissolved)	0.002	0.00016	0.001 U	0.001 U	-	-	-	-	-
Vanadium	-	0.078	0.05 U	0.05 U	0.05 U	-	-	-	-
Vanadium (dissolved)	-	0.078	0.05 U	0.05 U	-	-	-	-	-
Zinc	-	4.7	0.02 U	0.02 U	0.02 U	-	-	-	-
Zinc (dissolved)	-	4.7	0.02 U	0.02 U	-	-	-	-	-
PCBs									
Aroclor-1016 (PCB-1016)	-	0.00096	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Aroclor-1221 (PCB-1221)	-	0.000004	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Aroclor-1232 (PCB-1232)	-	0.000004	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Aroclor-1242 (PCB-1242)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Aroclor-1248 (PCB-1248)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Aroclor-1254 (PCB-1254)	-	0.000034	0.0002 U	0.0002 U	0.000046 ^b	-	-	-	-
Aroclor-1260 (PCB-1260)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-
Pesticides									
4,4'-DDD	-	0.000027	0.00005 U	0.00005 UJ	0.00005 U	-	-	-	-
4,4'-DDE	-	0.0002	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
4,4'-DDT	-	0.0002	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Aldrin	-	0.000004	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
alpha-BHC	-	0.0000062	0.00005 U	0.00005 U	0.00004 J ^b	-	-	-	-
alpha-Chlordane	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
beta-BHC	-	0.000022	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
delta-BHC	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Dieldrin	-	0.0000015	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endosulfan I	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endosulfan II	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endosulfan sulfate	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endrin	0.002	0.0017	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endrin aldehyde	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Endrin ketone	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
gamma-BHC (lindane)	0.0002	0.000036	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
gamma-Chlordane	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Heptachlor	0.0004	0.0000018	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Heptachlor epoxide	0.0002	0.0000033	0.00005 U	0.00005 U	0.00005 U	-	-	-	-
Methoxychlor	0.04	0.027	0.0001 U	0.0001 U	0.0001 U	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-209	MW-209A	MW-209A	MW-212	MW-212	MW-212	MW-212	MW-212	MW-212
Sample ID:	GW-38443-072109-GL-003	GW-38443-072209-GL-004	GW-38443-010510-DR-007	MW212	MW212	MW212	MW212	MW212	MW212
Sample Date:	7/21/2009	7/22/2009	1/5/2010	2/18/1999	11/11/1999	5/10/2000	6/6/2001	6/14/2002	7/2/2004
Sample Depth:	694.48-686.48 ft AMSL	660.34-655.34 ft AMSL	660.34-655.34 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL
<i>USEPA Regional Screening Levels [1]</i>									
Parameter	MCL a	Tap Water b							
Toxaphene	0.003	0.000013	0.002 U	0.002 U	0.002 U	-	-	-	-
<u>Herbicides</u>									
2,4,5-TP (Silvex)	0.05	0.084	0.001 U	0.001 U	-	-	-	-	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	0.004 U	0.004 U	-	-	-	-	-
<u>Gases</u>									
Ethane	-	-	0.001	0.0068	0.0033 J	0.001	-	-	-
Ethene	-	-	0.0005 U	0.00026 J	0.0005 U	U	-	-	-
Methane	-	-	0.28	0.43	0.078	1.3 D/0.3 E	-	-	-
<u>General Chemistry</u>									
Alkalinity, total (as CaCO ₃)	-	-	309	394	374	270	-	-	-
Ammonia-N	-	-	-	-	-	1.7	-	-	-
Chloride	-	-	41.0	66.8	78.4	96.3	-	-	-
Cyanide (total)	0.2	0.0014	0.010 U	0.010 U	-	-	-	-	-
Dissolved organic carbon (DOC)	-	-	4	5	4	-	-	-	-
Hardness	-	-	291	407	445	-	-	-	-
Nitrate (as N)	10	25	0.10 U	0.10 U	0.10 U	U	-	-	-
Nitrite (as N)	1	1.6	0.10 U	0.10 U	0.10 U	-	-	-	-
Sulfate	-	-	45.0	58.8	65.0	94.5	-	-	-
Sulfide (acid soluble)	-	-	3.0 U	3.0 U	3.0 U	-	-	-	-
Total organic carbon (TOC)	-	-	-	-	-	4	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

D - value is real, but above maximum detection limit and below required detection limit (Organics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This may indicates compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-212	MW-212	MW-212	MW-212A	MW-218A	MW-218B	MW-218B	MW-218B
Sample ID:	MW212	MW212	GW-38443-090408-GL-001	GW-38443-072109-GL-001	GW-38443-122209-DR-003	GW-38443-072109-GL-002	GW-38443-122209-DR-001	GW-38443-122209-DR-002
Sample Date:	10/14/2004	8/3/2005	9/4/2008	7/21/2009	12/22/2009	7/21/2009	12/22/2009	12/22/2009
Sample Depth:	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	708.17-698.17 ft AMSL	708.17-698.17 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL
USEPA Regional Screening Levels [1]								Duplicate
Parameter	MCL	Tap Water						
	<i>a</i>	<i>b</i>						
Volatiles								
1,1,1-Trichloroethane	0.2	7.5	U	U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	U	U	0.001 U	0.001 UJ	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	U	U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.007	0.26	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	-	-	0.001 U	0.001 UJ	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.0000032	-	-	0.002 UJ	0.002 U	0.002 UJ	0.002 UJ
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	U	U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethene (total)	-	0.13	U	U	-	-	-	-
1,2-Dichloropropane	0.005	0.00038	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	-	-	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	-	-	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	-	-	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	-	-	0.01 U	0.01 UJ	0.01 U	0.01 UJ
Acetone	-	12	U	U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	U	U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	U	U	0.001 UJ	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	-	-	0.001 U	0.001 U	0.001 U	0.001 UJ
Carbon disulfide	-	0.72	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U
Carbon tetrachloride	0.005	0.00039	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	U	U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	U	U	0.001 U	0.001 U	0.001 U	0.001 UJ
Chloroform (Trichloromethane)	0.08	0.00019	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	-	-	0.001 U	0.001 U	0.001 UJ	0.001 UJ
cis-1,2-Dichloroethene	0.07	0.028	-	-	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Cyclohexane	-	13	-	-	0.001 U	0.001 UJ	0.001 UJ	0.001 U
Dibromochloromethane	0.08	0.00015	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	-	-	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ
Ethylbenzene	0.7	0.0013	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	-	-	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	-	-	0.001 U	0.001 UJ	0.001 UJ	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	-	-	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	U	U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	U	U	0.001 UJ	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	U	U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	U	U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.1	0.086	-	-	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Trichloroethene	0.005	0.00044	U	U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.002	0.000015	U	U	0.001 U	0.001 U	0.001 U	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-212	MW-212	MW-212	MW-212A	MW-218A	MW-218B	MW-218B	MW-218B
Sample ID:	MW212	MW212	GW-38443-090408-GL-001	GW-38443-072109-GL-001	GW-38443-122209-DR-003	GW-38443-072109-GL-002	GW-38443-122209-DR-001	GW-38443-122209-DR-002
Sample Date:	10/14/2004	8/3/2005	9/4/2008	7/21/2009	12/22/2009	7/21/2009	12/22/2009	12/22/2009
Sample Depth:	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	708.17-698.17 ft AMSL	708.17-698.17 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL
<i>USEPA Regional Screening Levels [1]</i>								
Parameter	MCL <i>a</i>	Tap Water <i>b</i>						
Xylenes (total)	10	0.19	U	U	0.002 U	0.002 U	0.002 U	0.002 U
<u>Semi-Volatiles</u>								
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	0.001 U	0.001 U	0.001 U	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	0.005 U	0.005 U	0.005 U	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	0.005 U	0.005 U	0.005 U	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	0.002 U	0.002 U	0.002 U	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	0.002 U	0.002 U	0.002 U	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	0.005 U	0.005 U	0.005 U	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	-	0.005 U	0.005 U	0.005 U	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	0.005 U	0.005 U	0.005 U	0.005 U
2-Chloronaphthalene	-	0.55	-	-	0.001 U	0.001 U	0.001 U	0.001 U
2-Chlorophenol	-	0.071	-	-	0.001 U	0.001 U	0.001 U	0.001 U
2-Methylnaphthalene	-	0.027	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
2-Methylphenol	-	0.72	-	-	0.001 U	0.001 U	0.001 U	0.001 U
2-Nitroaniline	-	0.15	-	-	0.002 U	0.002 U	0.002 U	0.002 U
2-Nitrophenol	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	0.005 U	0.005 U	0.005 U	0.005 U
3-Nitroaniline	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	0.005 U	0.005 U	0.005 U	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4-Chloroaniline	-	0.00032	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4-Methylphenol	-	1.4	-	-	0.001 U	0.001 U	0.001 U	0.001 U
4-Nitroaniline	-	0.0033	-	-	0.002 U	0.002 U	0.002 U	0.002 U
4-Nitrophenol	-	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U
Acenaphthene	-	0.4	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Acenaphthylene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Acetophenone	-	1.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Anthracene	-	1.3	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Atrazine	0.003	0.00026	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Benzaldehyde	-	1.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(a)pyrene	0.0002	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	0.0024 U	0.002 U	0.002 U	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Caprolactam	-	7.7	-	-	0.011	0.005 U	0.005 U	0.005 U
Carbazole	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Chrysene	-	0.0029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Dibenzofuran	-	0.0058	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Diethyl phthalate	-	11	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Dimethyl phthalate	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-212	MW-212	MW-212	MW-212A	MW-218A	MW-218B	MW-218B	MW-218B
Sample ID:	MW212	MW212	GW-38443-090408-GL-001	GW-38443-072109-GL-001	GW-38443-122209-DR-003	GW-38443-072109-GL-002	GW-38443-122209-DR-001	GW-38443-122209-DR-002
Sample Date:	10/14/2004	8/3/2005	9/4/2008	7/21/2009	12/22/2009	7/21/2009	12/22/2009	12/22/2009
Sample Depth:	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	708.17-698.17 ft AMSL	708.17-698.17 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL
USEPA Regional Screening Levels [1]								
Parameter	MCL	Tap Water						
	<i>a</i>	<i>b</i>						
Di-n-butylphthalate (DBP)	-	0.67	-	-	0.0012 U	0.001 U	0.001 U	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Fluoranthene	-	0.63	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Fluorene	-	0.22	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	0.01 U	0.01 U	0.01 U	0.01 U
Hexachloroethane	-	0.00079	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Isophorone	-	0.067	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Naphthalene	-	0.00014	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nitrobenzene	-	0.00012	-	-	0.001 U	0.001 U	0.001 U	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	0.001 U	0.001 U	0.001 U	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	0.005 U	0.005 U	0.005 U	0.005 U
Phenanthrene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Phenol	-	4.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Pyrene	-	0.087	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Metals								
Aluminum	-	16	-	-	0.15 J	0.2 U	0.2 U	1.05
Aluminum (dissolved)	-	16	-	-	-	0.2 U	0.2 U	0.2 U
Antimony	0.006	0.006	-	-	0.002 U	0.00046 J	0.00027 J	0.00015 J
Antimony (dissolved)	0.006	0.006	-	-	-	0.00045 J	0.00023 J	0.002 U
Arsenic	0.01	0.000045	-	-	0.0037^b	0.00074^b	0.00057 J^b	0.004 J^b
Arsenic (dissolved)	0.01	0.000045	-	-	-	0.00083^b	0.00056 J^b	0.0041 J^b
Barium	2	2.9	-	-	0.175 J	0.104 J	0.089 J	0.186 J
Barium (dissolved)	2	2.9	-	-	-	0.104 J	0.0898 J	0.177 J
Beryllium	0.004	0.016	-	-	0.005 U	0.005 U	0.005 U	0.005 U
Beryllium (dissolved)	0.004	0.016	-	-	-	0.005 U	0.005 U	0.005 U
Cadmium	0.005	0.0069	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium (dissolved)	0.005	0.0069	-	-	-	0.001 U	0.001 U	0.001 U
Calcium	-	-	-	-	37.7	51.4	46.1	98
Calcium (dissolved)	-	-	-	-	-	51.3	45.9	92.1
Chromium	0.1	-	-	-	0.01 U	0.01 U	0.01 U	0.01 U
Chromium (dissolved)	0.1	-	-	-	-	0.01 U	0.01 U	0.01 U
Cobalt	-	0.0047	-	-	0.05 U	0.05 U	0.05 U	0.05 U
Cobalt (dissolved)	-	0.0047	-	-	-	0.05 U	0.05 U	0.05 U
Copper	1.3	0.62	-	-	0.025 U	0.025 U	0.025 U	0.025 U
Copper (dissolved)	1.3	0.62	-	-	-	0.025 U	0.025 U	0.025 U
Iron	-	11	-	-	0.894	0.1 U	0.1 U	4.15
Iron (dissolved)	-	11	-	-	-	0.1 U	0.1 U	3.77
Lead	0.015	-	-	-	0.001 U	0.001 U	0.001 U	0.00087 J
Lead (dissolved)	0.015	-	-	-	-	0.001 U	0.001 U	0.001 U
Magnesium	-	-	-	-	11.5	23.3	28.5	33.4
Magnesium (dissolved)	-	-	-	-	-	23.3	28.5	31.4
Manganese	-	0.32	-	-	0.0572	0.0586	0.0326	0.0705
Manganese (dissolved)	-	0.32	-	-	-	0.0593	0.032	0.0641
Manganese 2+	-	-	-	-	-	0.050 U	0.028 J	0.250 U
								0.037 J
								0.044 J

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-212	MW-212	MW-212	MW-212A	MW-218A	MW-218B	MW-218B	MW-218B
Sample ID:	MW212	MW212	GW-38443-090408-GL-001	GW-38443-072109-GL-001	GW-38443-122209-DR-003	GW-38443-072109-GL-002	GW-38443-122209-DR-001	GW-38443-122209-DR-002
Sample Date:	10/14/2004	8/3/2005	9/4/2008	7/21/2009	12/22/2009	7/21/2009	12/22/2009	12/22/2009
Sample Depth:	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	708.17-698.17 ft AMSL	708.17-698.17 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL
<i>USEPA Regional Screening Levels [1]</i>								
<i>Parameter</i>	<i>MCL</i>	<i>Tap Water</i>						
	<i>a</i>	<i>b</i>						
Mercury	0.002	0.00063	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Mercury (dissolved)	0.002	0.00063	-	-	-	0.0002 U	0.0002 U	0.0002 U
Nickel	-	0.3	-	-	0.04 U	0.04 U	0.04 U	0.04 U
Nickel (dissolved)	-	0.3	-	-	-	0.04 U	0.04 U	0.04 U
Potassium	-	-	-	-	13.6	5.04	3.84 J	2.68 J
Potassium (dissolved)	-	-	-	-	-	5.1	3.86 J	2.56 J
Selenium	0.05	0.078	-	-	0.005 U	0.005 U	0.005 U	0.005 U
Selenium (dissolved)	0.05	0.078	-	-	-	0.005 U	0.005 U	0.005 U
Silver	-	0.071	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Silver (dissolved)	-	0.071	-	-	-	0.001 U	0.001 U	0.001 U
Sodium	-	-	-	-	105	25.1	26.2	24.5
Sodium (dissolved)	-	-	-	-	-	25.5	26.1	23.5
Thallium	0.002	0.00016	-	-	0.001 U	0.001 U	0.001 U	0.001 U
Thallium (dissolved)	0.002	0.00016	-	-	-	0.001 U	0.001 U	0.001 U
Vanadium	-	0.078	-	-	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium (dissolved)	-	0.078	-	-	-	0.05 U	0.05 U	0.05 U
Zinc	-	4.7	-	-	0.02 U	0.02 U	0.02 U	0.02 U
Zinc (dissolved)	-	4.7	-	-	-	0.02 U	0.02 U	0.02 U
<i>PCBs</i>								
Aroclor-1016 (PCB-1016)	-	0.00096	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1221 (PCB-1221)	-	0.000004	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1232 (PCB-1232)	-	0.000004	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1242 (PCB-1242)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1248 (PCB-1248)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1254 (PCB-1254)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1260 (PCB-1260)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U
<i>Pesticides</i>								
4,4'-DDD	-	0.000027	-	-	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U
4,4'-DDE	-	0.0002	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
4,4'-DDT	-	0.0002	-	-	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U
Aldrin	-	0.000004	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
alpha-BHC	-	0.0000062	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
alpha-Chlordane	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
beta-BHC	-	0.000022	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
delta-BHC	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Dieldrin	-	0.0000015	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan I	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan II	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan sulfate	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin	0.002	0.0017	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin aldehyde	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin ketone	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
gamma-BHC (lindane)	0.0002	0.000036	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
gamma-Chlordane	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Heptachlor	0.0004	0.0000018	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Heptachlor epoxide	0.0002	0.0000033	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Methoxychlor	0.04	0.027	-	-	0.0001 UJ	0.0001 U	0.0001 U	0.0001 UJ

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:	MW-212	MW-212	MW-212	MW-218A	MW-218A	MW-218B	MW-218B	MW-218B
Sample ID:	MW212	MW212	GW-38443-090408-GL-001	GW-38443-072109-GL-001	GW-38443-122209-DR-003	GW-38443-072109-GL-002	GW-38443-122209-DR-001	GW-38443-122209-DR-002
Sample Date:	10/14/2004	8/3/2005	9/4/2008	7/21/2009	12/22/2009	7/21/2009	12/22/2009	12/22/2009
Sample Depth:	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	680.31-670.31 ft AMSL	708.17-698.17 ft AMSL	708.17-698.17 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL	650.13-645.13 ft AMSL
USEPA Regional Screening Levels [1]								
Parameter	MCL a	Tap Water b						Duplicate
Toxaphene	0.003	0.000013	-	-	0.002 U	0.002 U	0.002 U	0.002 U
<u>Herbicides</u>								
2,4,5-TP (Silvex)	0.05	0.084	-	-	0.001 U	0.001 U	0.001 U	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	-	-	0.004 U	0.004 U	0.004 U	-
<u>Gases</u>								
Ethane	-	-	-	-	0.0005 U	0.0005 UJ	0.0005 U	0.0005 UJ
Ethene	-	-	-	-	0.0005 U	0.0005 UJ	0.0005 U	0.00031 J
Methane	-	-	-	-	0.039	0.016	0.0036	0.0026
<u>General Chemistry</u>								
Alkalinity, total (as CaCO ₃)	-	-	-	-	194	199	308	288
Ammonia-N	-	-	-	-	-	-	-	-
Chloride	-	-	-	-	43.1	42.8	54.6	57.9
Cyanide (total)	0.2	0.0014	-	-	0.010 U	-	0.010 U	-
Dissolved organic carbon (DOC)	-	-	-	-	3	2	2	2
Hardness	-	-	-	-	224	232	382	369
Nitrate (as N)	10	25	-	-	0.10 U	0.10 U	0.10 U	0.10 U
Nitrite (as N)	1	1.6	-	-	0.10 U	0.10 U	0.10 U	0.10 U
Sulfate	-	-	-	-	33.2	32.5	69.7	65.1
Sulfide (acid soluble)	-	-	-	-	3.0 U	3.0 U	3.0 U	3.0 U
Total organic carbon (TOC)	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

D - Value is real, but above instrument detection limit and below contract-required detection limit (Organics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

-- Not applicable.